

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

FEBRUARY **Important Features** FEBRUARY

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Concrete Foundation Work

Plans and Details

Detailed Rafter Plan for Hip-and-Valley Roof
Desirable Homes for City and Suburb
The Farm House and Its Design

Recommended Practice

The Home Workshop—Is It Worth While?
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To do this you must be a good *Draftsman*, not one of those "*would be*" ones, *no*, but a first-class man, with actual, practical *drafting room experience*.

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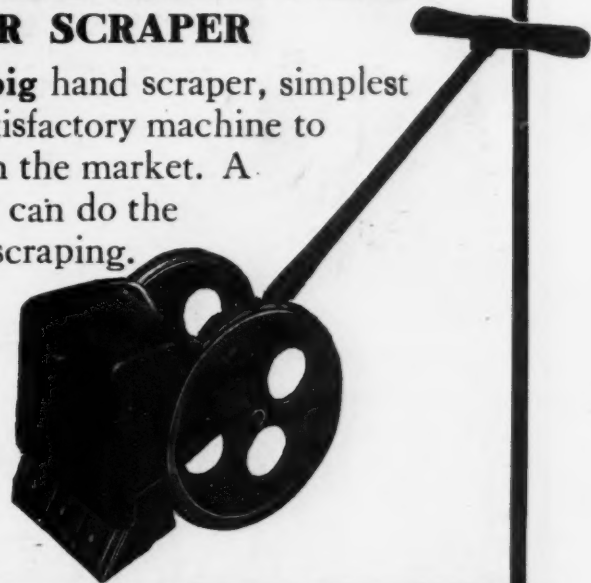
**Chief
Drafts
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The "LITTLE SHAVER" FLOOR SCRAPER

The weight
is where it
should be,
directly on
the knife
and not on
the handle
as in other
scrapers.

is nothing but a **big** hand scraper, simplest
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boy can do the
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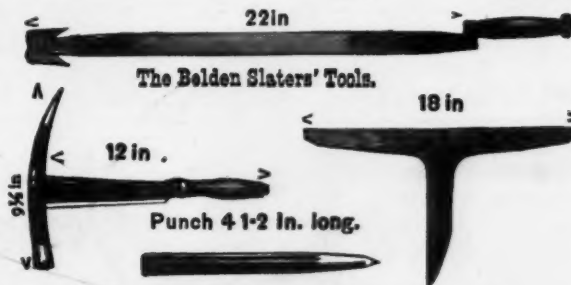


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Made-to-order steel used in their
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OUR HAMMERS
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**Fox
Floor
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No. 1**

A Perfect
Machine
for
Perfect
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Old, Tried and True. None to equal it. None just as
good, experiment with others, but when you want a
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Fox Cabinet Scraper works like a
plane. A FINE TOOL for fine
work. Price Postpaid only
\$1.25.

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Fox Cabinet Scraper



FOX MFG. CO.

Milwaukee, Wis.



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is the original and only two-roll, self-propelling, dust collecting machine, protected by U. S. and Foreign patents, and the only one that will satisfactorily surface any kind of a wood floor, and has been in general use by contractors, hardwood floor companies and others for over five years.

Its work is rapid, regular, smooth and even, because the power that drives the rolls propels the machine at the same ratio of speed.

Its work has established the standard for surfaced floors, and the only machine whose work is specified by leading architects and meets the requirements of contractors, owners and hardwood floor companies for finely finished, smooth, even floors.

It has surfaced and polished millions of square feet of the finest floors in America and Europe.

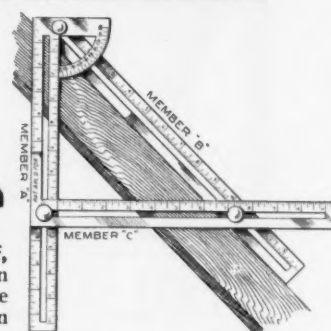
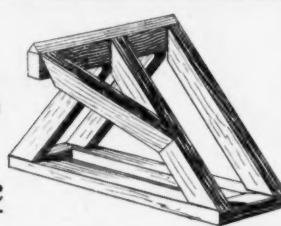
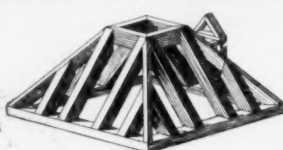
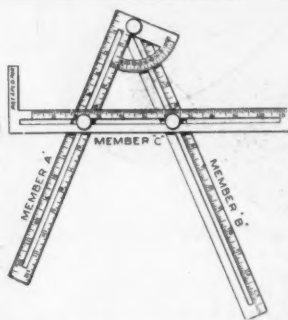
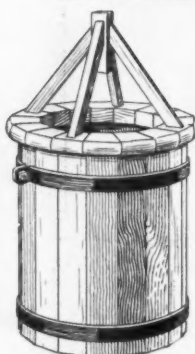
Don't be fooled with an imitation, but get a machine that does work in paying quantities, and can be operated in small rooms.

The only one whose construction is guaranteed and sold on its merits.

Write for our book "Surfacing Floors as a Business."

Manufactured by

The American Floor Surfacing Machine Company
TOLEDO, OHIO



A FREE Course

To anyone purchasing the A B C Protractor Square, we will teach the art of roof, stairway, and circular work absolutely free. This is an opportunity of your life time, as in a short time by the use of the A B C Protractor Square, you can become an

expert on work of this kind and demand as big wages as a carpenter that has made a life study of the common square. It is the simplest tool on the market, and yet the best tool. It is an adjustable triangle. The price of the square is \$3.00 and the course of instruction FREE. Send at once if you expect to get the order filled soon.

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LATEST IMPROVED ALL IRON SWING CUT-OFF SAW



alone of its kind

Properly
Counter-
Balanced

Adjustable
Hanger

With Six Inch Adjustment

CAN BE HUNG
ANYWHERE

On the Floor
Under the Floor
On the Wall

With same ease of operation

Write for FREE Catalog
of our complete line.

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COMPLETE OUTFIT

Hand and Foot-Power
MACHINERY

Our No. 3 Wood Turning Lathe can be speeded from 1,000 to 2,000 revolutions a minute with perfect ease. Stopped or reversed at will of operator.

Write for Particulars

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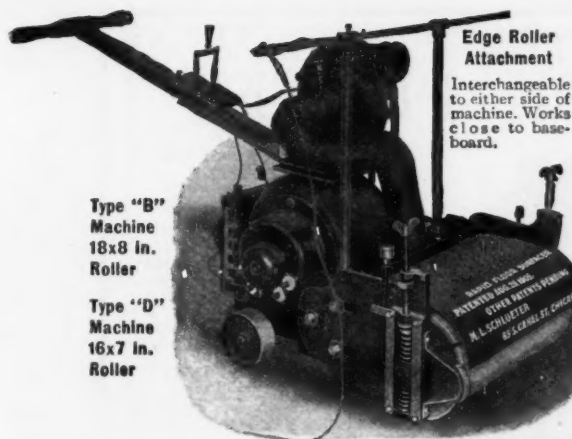
CALIPERS and DIVIDERS For CARPENTERS



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Perfect Results Easily Obtained **Schluter Rapid Floor Surfacers**

Built on the only correct principle. Guaranteed to be **THE BEST** machine with which to produce an even, smooth surface on any kind of wood floor old or new, hard or soft, and in all buildings; Residences, Stores, Factories, Bowling Alleys, Roller Skating Rinks, Reception and Dance Halls, etc. **THE SCHLUTER** will remove all joints or warped edges, and leave the floor perfectly smooth. Will remove shellac, varnish, oil, wax, lime stains or the "muck" from skate wheels in a most satisfactory manner.

WE SELL MACHINE OR SURFACE YOUR FLOOR

EASY TO OPERATE. NO DUST. Over 500 contractors are now using our Machines. Made in two sizes. We will surface your floor. Mail us size of floor, new or old, and kind of electric power. In eight hours will sandpaper 4,000 to 5,000 sq. ft. once over. Write for new prices, catalogue and our FREE TRIAL proposition.

FREE Illustrated booklet containing full information sent free to contractors.

Sandpaper the Only Perfect Way

The **SCHLUTER RAPID FLOOR SURFACER** is so constructed that a roller, to which a sheet of sandpaper is quickly adjusted, is brought in contact with the floor surface while revolving at a speed of 600 revolutions a minute. It is guaranteed to do the work cheaper and smoother than any other machine or method. This machine will surface from one to two thousand square feet in eight hours. Cost of sandpaper and electric power from \$1.00 to \$2.00 per day.

M. L. SCHLUTER 28 S. Canal St. CHICAGO

"YANKEE" Tool No. 44 Saves your Drill Points Adjustable for Hard or Soft Woods



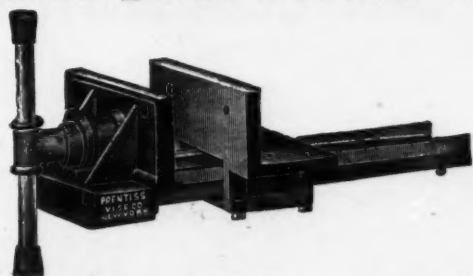
Have you seen all our New Tools?

Get our Tool Book full of new ideas in reliable time and labor-saving tools for all classes of mechanics. Illustrated with photographic reproductions of the tools in use. It's worth having. **FREE** to mechanics who mention the "American Carpenter and Builder."

Quickly adjusted to the proper tension for hard or soft woods, or the 8 different Drill Points furnished with each tool. No other Drill made has this feature. A very handy and reliable tool. Just the thing for awkward places. Strong and durable. Weighs only 11 oz.

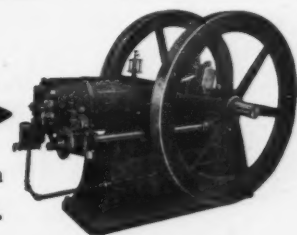
All hardware dealers sell "Yankee" Tools
NORTH BROS. MFG. CO.
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BLAKE QUICK ACTING VISE



For Cabinet Makers and Wood Workers. Simplest—Strongest—Cheapest—Best
Send for Catalogue of all kinds of Vises
PRENTISS VISE COMPANY, MAKERS
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Power for Your Shop



Write for our
Special Proposition on
**3 H. P. and 6 H. P.
Engines**

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Backed by Five Years' Guarantee
Weber Gas and Gasoline Engines

Built on the Experience of 25 Years of Good Engine Building

WEBER GAS ENGINE CO.,

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FAR AHEAD for Smooth, easy work and holding edge will be YOUR VERDICT ON TRYING

CHAPLIN'S IMPROVED PLANES

Patented Feb. 14, 1899; Oct. 30, 1900; Dec. 24, 1902

We invite the
Severest
Comparative
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We want you to have a copy of
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"A 'Plane' Talk About
a Good Plane!"

We want you to have a copy,
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We'll gladly send you this
booklet with our compliments,
promptly upon receipt of your
request.

Tower & Lyon Company, 95 Chambers Street, New York

PEARSON'S IMPROVED Nailer



SEE THAT NAIL

HERE'S an improved hand nailing tool that can be used for driving practically any ordinary nails and is especially adapted for driving shingle nails.
No trouble to handle, because it weighs only two pounds. Can be used with gloves or mittens on and in any season. Is operated as easily on a pitched roof as on the level surface. No slipping nails, no bruise fingers, no loss of time and temper.
Start saving money by making the Pearson Nailer part of your equipment.
Your dealer has them—if not send to us. Complete information for a postal.

PEARSON MFG. CO., Robbinsdale, Minn.

We Save You 30 to 75% on Plumbing Fixtures

**This is how
the saving
is effected**

By buying large quantities of plumbing goods for cash we are enabled to sell direct from our warehouse to contractors, carpenters and builders at wholesale prices. The middleman is eliminated. The profit you have hitherto paid the retailer you save for yourself. We guarantee every article we sell. We also guarantee satisfaction. You take no risk in ordering—money back if you ask for it.

Here's an Enamel Kitchen Sink that costs only \$12.75

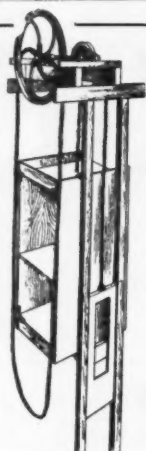
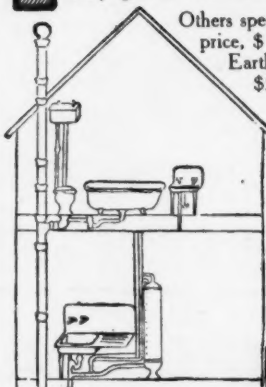
A neat, practical sink, made from high quality materials and fully guaranteed; this is a favorite among many contractors.

Others specialties are: White Enamel Bathtub, price, \$16.00; Enameled Washbowl, \$8.75; Earthen Closet, \$12.00; 30-gallon Boiler, \$5.85. Or the five fixtures may be bought for \$54.45 delivered free.

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**John Hardin
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4539 COTTAGE GROVE AVE.,
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In Business Quarter Century at
present address.



This DUMB WAITER

complete ready
to erect for - **\$18.50**

SELF RETAINING MACHINE
HARDWOOD CAR
SECTIONAL WEIGHT
ROPE, GUIDES, HARDWARE,

knocked down and shipped with the only
complete directions for erect-
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Our Door Lock Mortiser

Is a Profitable Investment

OUR CLAIM

It will cut an opening for a mortise lock in THREE
MINUTES in any kind of wood, plain or veneer.



OUR PROOF

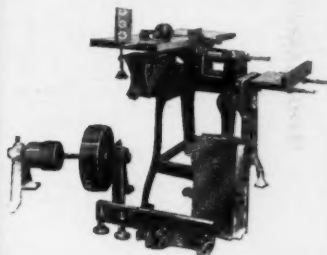
To allow any reliable Contractor ten days' trial.

**Let the Tool Demonstrate
Its Merit**

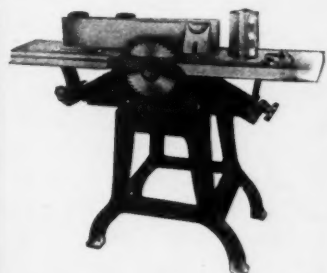
Western Office **A. W. Miller Mfg. Co.** Main Office
RIVERSIDE, CALIF. : CINCINNATI, O.



Our Latest Up-to-Date Band Saws, built in 20-in., 27-in., 32-in. and 36-in. all iron tables, tilting to an angle of 45 degrees.



Back View of the Combination Jointer and Saw Table, fitted up with the Saw Table and Boring Machine.



Front View of the Combination Jointer and Saw Table, fitted up with the Jointer and Rip Saw.



No. 5 Tilting Top Saw Table, all iron, and will tilt to an angle of 45 degrees.

Write us at once for our "B" catalogue, giving a complete description of the Universal Wood Worker, and also the Combination Jointer and Saw Table with all of the attachments. Our general catalogue is also free.

ECONOMY

is the word which all up-to-date Contractors are looking forward to.

THE UNIVERSAL WOOD WORKER.

will solve the problem. If you doubt our word, read a few of the testimonials given here below on the Universal Wood Worker and the Combination Jointer and Saw table, which we are receiving daily on these machines. Tell us what kind of work you wish to do and we will do the rest.

Pacific Coast Mfg. Co., Los Angeles, Cal.

Gentlemen: In reply to your inquiry of recent date, in regard to the Universal Wood Worker, which I purchased from you recently, will say that I am well pleased with the machine; it is certainly a great labor saver. It has saved me at least 10 per cent of the labor on the house I am just finishing at Hollywood, and the sawing material will more than pay for the power. I am using three-horse single-phase motor.

Respectfully yours,
W. J. NICHOLS.

The Sidney Tool Co.

Gentlemen: Your letter of the 20th is best answered in one word, "Satisfied." the machine works nicely in every way. This is the fourth Universal Wood Worker I have operated at different times, and this one is an improvement on others of higher prices.

Yours respectfully,
THE KEYSTONE BRICK & TILE CO.,
Auburn, N. Y., Oct. 28th, 1908.

Dear Sirs: I am glad to recommend the combination jointer and saw table which I bought of you recently, in every way it has given perfect satisfaction for a small shop. Very truly yours,

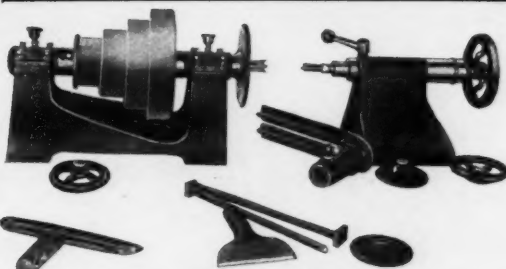
CARL B. FRITZ,
Greenville, Ill., Nov. 19th, 1908.

Cleveland, O., April 18th, 1908.

The Sidney Tool Co., Sidney, O.

Gentlemen: The combination jointer and saw table which we bought of you is surely a winner. One could not believe the vast amount of work that can be turned out on this machine. Since I have owned this machine I have been using it for a jointer, rip saw and wood worker. I would not trade my machine for any wood worker I have ever used. I am also much pleased with your 27-in. band saw and 14-in. turning lathe. I can do more work on the band saw than on any 36 inch machine I have ever seen. Yours truly,

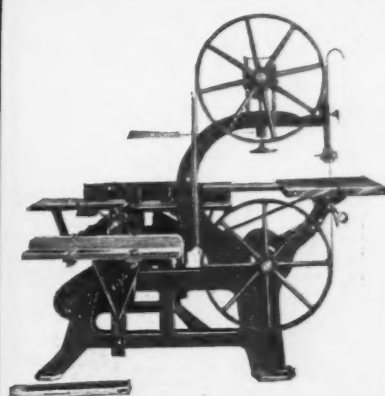
G. E. WHALING & SONS.



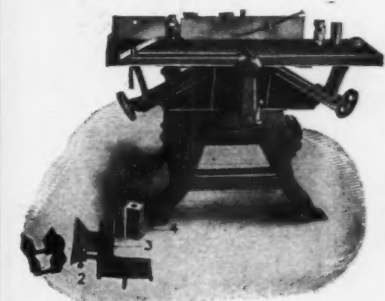
Wood and Pattern Turning Lathes, built in sizes from 12-in. to 25-in.

We give an ironclad guarantee with every machine that they must be exactly as represented and described in catalogue and folder. If they are not as we represent, we will give the purchaser the opportunity of returning them to us, and we will refund his money, paying all freight charges. Every attachment is guaranteed to work perfectly on the Universal Wood Worker.

The Sidney Tool Co.
Sidney, Ohio



Universal Wood Worker, fitted up with Band Saw, Mortising Attachment, Shaper and Jointer.



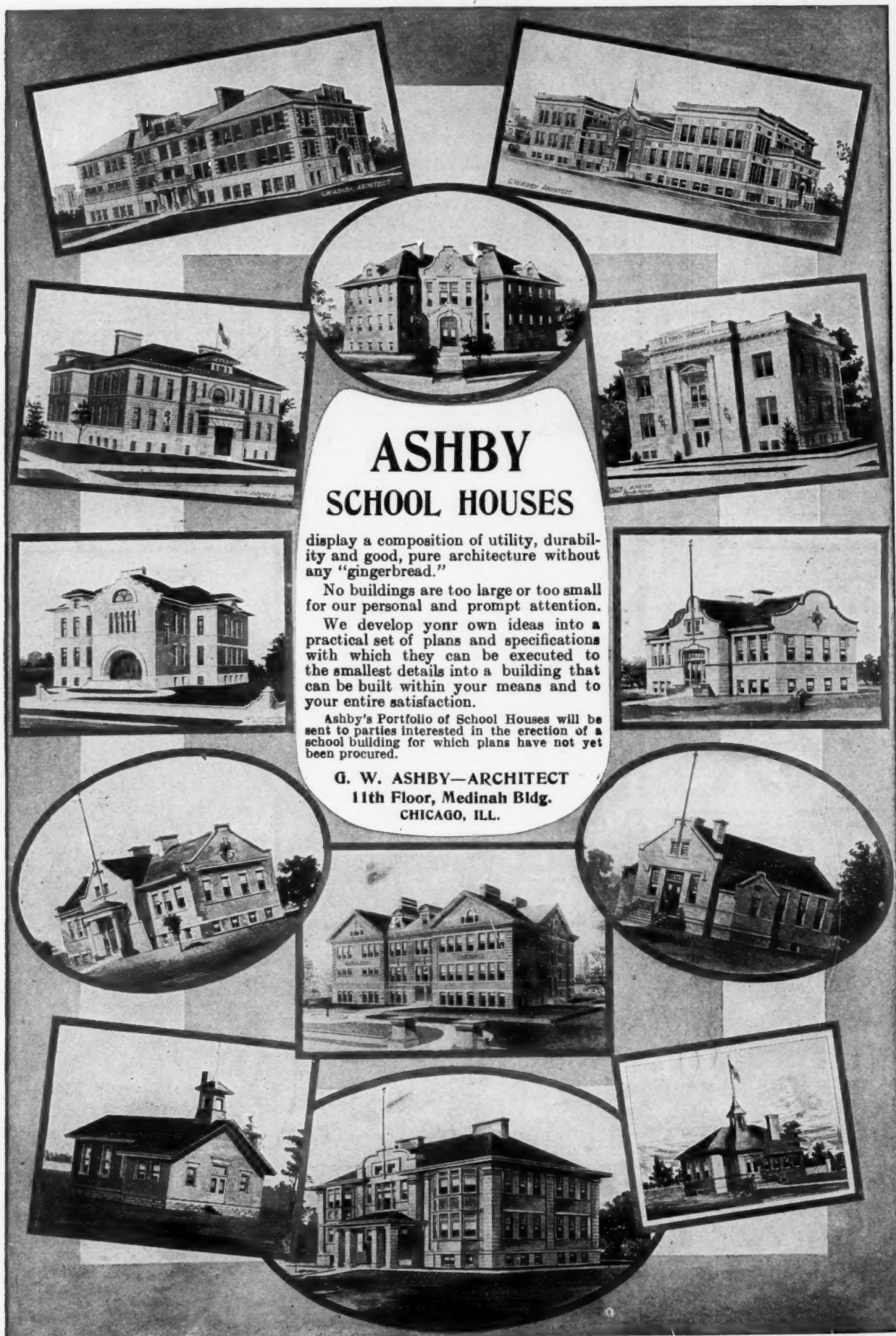
Universal Wood Worker, fitted up with Jointer, Shaper and Two Side Molder.



Universal Wood Worker, equipped with our Planing Attachment, will plane up to 4 in. thick and 10 in. wide; also arranged for doing two side molding, matching and sticking.



Universal Wood Worker, fitted up with the Single End Tenoning Attachment, with traveling table and hold down lever.



ASHBY SCHOOL HOUSES

display a composition of utility, durability and good, pure architecture without any "gingerbread."

No buildings are too large or too small for our personal and prompt attention.

We develop your own ideas into a practical set of plans and specifications with which they can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

Ashby's Portfolio of School Houses will be sent to parties interested in the erection of a school building for which plans have not yet been procured.

G. W. ASHBY—ARCHITECT
11th Floor, Medinah Bldg.
CHICAGO, ILL.



The WEBER DOUBLE ACTING Floor Scraper

The Weber is the Highest Priced Scraper on the Market

Other floor scrapers may be cheaper than The Weber. But I am not selling The Weber on price: it sells on quality. I could not afford to make The Weber cheaper and, anyhow, if I did, you would not want it. I am trying to build a scraper that will last a lifetime and do perfect work as long as it holds together. Isn't that what you want? I am out to build reputation on each and every scraper I sell.

Although The Weber has been on the market less than a year, it is in use in fully two thirds of the States of the Union. Of its users, over one-third have formerly been working with other scrapers, which sell for less money than mine, but are more expensive in the end.

Could I say more to convince you of The Weber's superiority? Doesn't this showing give you an idea of why I have sufficient confidence in my machine to offer you a Free Trial? I offer you this Free Trial to let the machine itself convince you—to let you fully understand its five different attachments, and its many valuable features, such as its adjustable blade holders, its double acting features and, especially, its flexible frame which enables me to guarantee that The Weber will not jump and chatter or leave waves in a floor. Do not buy a floor scraper until you have tried The Weber. Write at once for my booklet and full particulars of my Free Trial Offer.

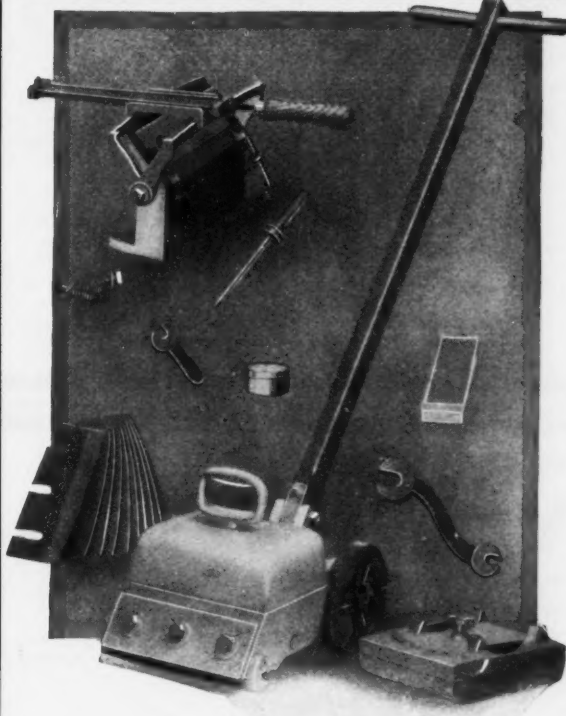


BACK AND FORTH MOVEMENT

THE WEBER AUTOMATIC SHARPENING DEVICE

enables the operator to sharpen a blade without removing it from the machine. The blade can't be sharpened at wrong angle—so simple a child can use it.

JOHN F. WEBER, PRESIDENT, WEBER MFG. CO. 670 71st AVENUE WEST ALLIS, WIS.



SIXTY-TWO PER CENT

of the **ACME FLOOR SCRAPING OUTFITS** shipped during the year 1908 were sold to contractors who had previously purchased another make of scraper. WHY? There must be a reason for this. No contractor will discard a machine that has given satisfaction. THE ACME FLOOR SCRAPING OUTFIT is sold strictly on its MERIT. It is the only complete and perfect equipment on the market today. Hundreds of actual users will tell you this.

If you are contemplating the purchasing of a floor scraper, don't buy the first that is offered to you. Investigate into the merits of the different makes. Work with the machines, then JUDGE BY RESULTS. I will assist you in this respect, by offering to send the ACME FLOOR SCRAPING OUTFIT to you on a WEEK'S FREE TRIAL, at my expense. Work with the scraper, note its automatic action, note its shearing cut adjustment, note the cam attachment that regulates the starting cut and prevents the blade from butting into the floor, note its removable weight. Try the BLADE SHARPENER (which, by the way, is the only device of its kind ever invented), and note how easy it is for an inexperienced man to put a perfect edge on a blade. Then use the SANDER, and see how easily it is adjusted to the scraper and how it is operated in the same manner. These are the special features of the FLOOR SCRAPING OUTFIT I offer to send you on TRIAL, and if the same does not meet with your entire approval, send it back.

As a trial costs you nothing, send for the outfit today.

The Acme Floor Scraping Outfit consists of the Floor Scraper, Blade Sharpener, Sander, One Dozen Blades, File, Gauge, Oil Stone, Two Wrenches, Two Bolts, Burnisher and Box of Tallow

Booklet fully describing the ACME MACHINES will be mailed on request.

JOS. MIOTKE, 249 Lake Street, MILWAUKEE, WIS.

3

New Features

These three features form the Ackermann New Knife Sharpener—the invention that ensures a perfect cutting edge all the time. It means better floor scraping than hitherto—it means quicker floor scraping. Not a talking point but a device that saves dollars for every user.

Ackermann Floor Scraper

The Ackermann is the best floor scraper. We guarantee it to do more, better and easier work than any other machine on the market. If it doesn't you get one free. Send for details of our offer under which any contractor may test the Ackermann Rapid Floor Scraper and Ackermann's New Knife Sharpener free at our expense.

J. B. ACKERMAN CO., 100 Pearl St., Grand Rapids, Mich.



Our Guarantee is a Protection to every Purchaser.

**Carry
A Ton,
Last
A LIFETIME—**

A pair of our smallest size

Wall Brackets.

There isn't room here to tell you
how cheap or how convenient they are.

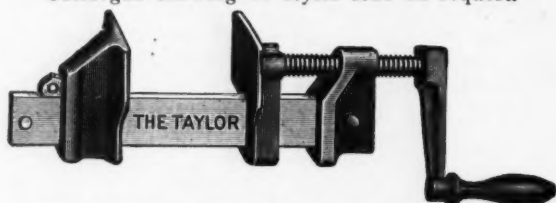
Write for Catalogue and Special Trial Offer.

ARE YOUR CLAMPS GIVING BEST RESULTS?

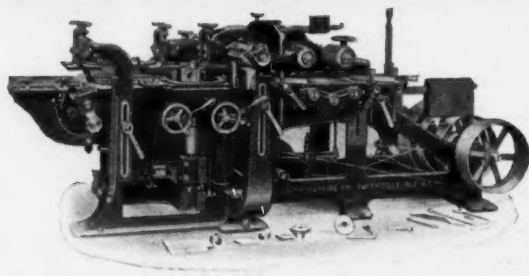
Do you know about our improved gripping device?

It Saves Time,
the special grade of steel we use?

Our Clamps are warranted unbreakable in use.
Catalogue showing 19 styles sent on request.



JAMES L. TAYLOR MFG. CO.
BLOOMFIELD, N. J. U. S. A.



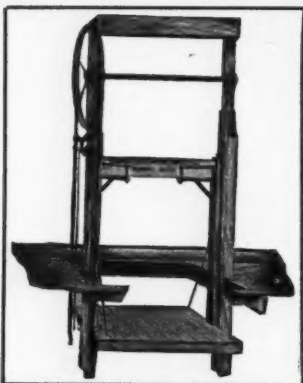
It's the Molder

that fills a most important position
in a wood-working plant. For this
reason: Manufacturers insist on having
a machine that has proven itself
through service.

The cut shows our **No. 105-A 12-in. Molder.** We have hundreds in operation throughout the world and they are adding daily to their reputations through their continued good service.

Write Us for Special Circulars and Prices

H. B. SMITH MACHINE CO.
SMITHVILLE, NEW JERSEY, U. S. A.



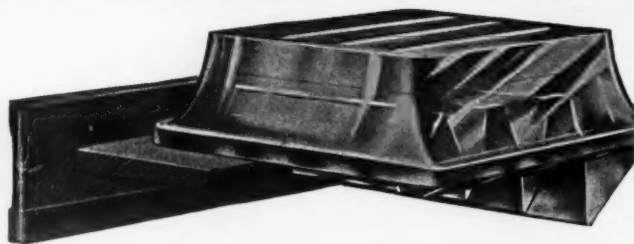
PERFECTION ELEVATORS

**ARE
"BEST BY EVERY TEST"**

For PASSENGER or FREIGHT SERVICE in Factories, Stores and Dwelling Houses.

Our Elevators are noted for their Easy Running and Serviceable Qualities. They are practically self contained and can be erected by any carpenter in a few hours. We furnish Plans for erecting. When writing, state your requirements.

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100 Per Cent More Light

IN DARK INTERIORS BY THE USE OF

3-WAY PRISMS

Prism Glass of All Kinds, Vault Lights, Window Lights, Skylights and Wired Prisms

See Pages 522-23-24-25 in Sweet's Index, at all Architects' and Builders' Offices

AMERICAN 3-WAY PRISM CO.

*Catalogue on
request*

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ONLY PERFECT FLOOR SURFACING MACHINE

Will do perfect job on any kind
of floor, whether even or uneven.

A Boy Can Operate It

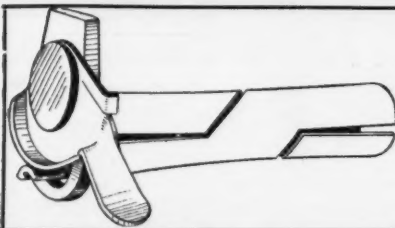
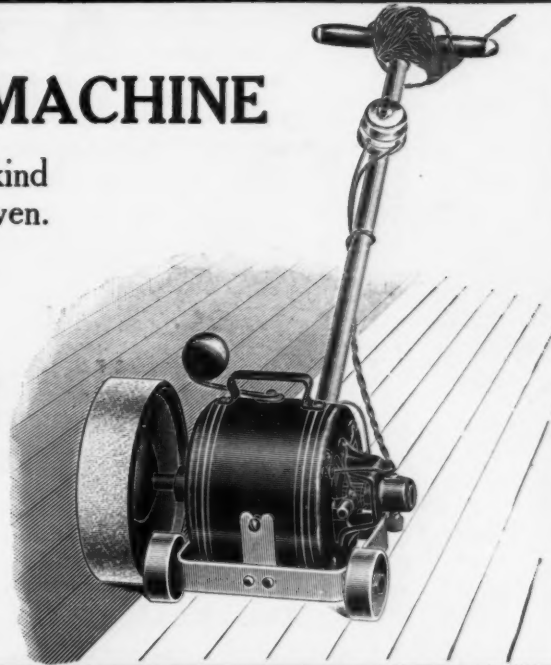
Sold on absolute guarantee. Price complete
with motor switch and 50 feet electric cord
ready to connect to light socket, \$125.00

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Chicago, Ill.



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Until you have one of these Stops. It
will please and satisfy you.

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After using it you will be very glad you

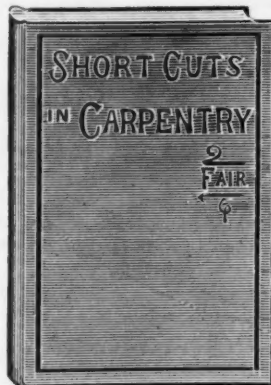
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TO LAY OUT and erect carpenters' work accurately and quickly is an accomplishment desired by all progressive carpenters. In this book, not only the simple rules for the short cut are given, but also the "reason why," so that the carpenter can apply his knowledge to many problems besides those given in this book.

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This useful, practical and unique instruction book contains remarks about the carpenter and his work; the difference between carpenters and joiners. Description of the various carpenter and joiners' work about a house illustrated with a large folding plate giving the names of the various parts of doors, windows, trim, etc. (This chart alone is worth the price of the book.) The practical use of geometry in laying out carpenters' work explained in a different way so the reader will know "why." How to obtain various miters, both for straight and curved work. How to make a miter box. Descriptions of different kinds of moldings. Bending moldings around circles and the art of kerfing explained simply and accurately, telling why it is done and how to do it. Rake moldings and how to lay them out fully explained, and several short-cut ways of doing it. How to find the corner brackets for coves. The use of the steel square in finding various pitches, degrees, miter cuts for polygons, etc. Use of the 2-foot rule in describing various figures when no other tool is at hand. The selection and use of glue. Hints on saving time when working on hardwood. The art of blind nailing. Setting door jambs, fitting and hanging doors. Fitting windows. How to cut pockets in window frames. Remarks on framing. Short cuts in placing siding. Siding a circular tower. Shingles required to cover a given roof area. Laying out octagon shingles. Quick method in finding bevel of shingles for gable. Framing a floor with short timbers. Building up a beam. Laying floors. Laying wood carpet. Constructing dished floors. The art of veneering on a small scale. Hints on inlaying. Roof framing explained on a new principle whereby you know the reason why the square is used and how to use it for different forms of roofs. How to find the sizes and cuts of braces. Bevels for hoppers. Making wheat bins. Quick method for beveling fence posts. Shaping a flag pole. Quick method of obtaining the bevel of tank staves. Making and placing well curbs, etc., etc.

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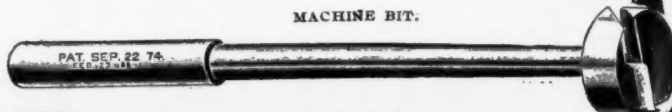
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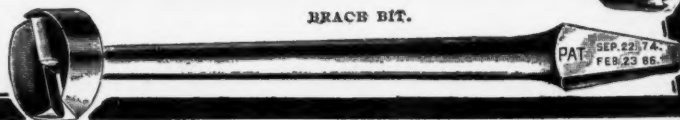
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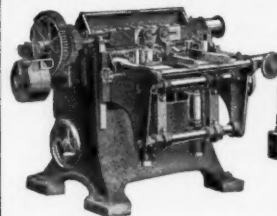
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A PRACTICAL TREATISE FOR THE WORKMAN

By

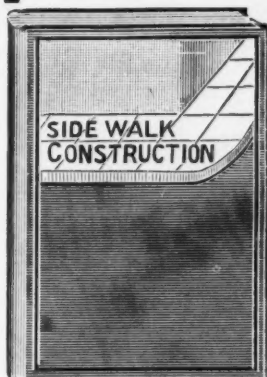
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The methods of work have been tried over and over again by the author in his many years of experience, and always with success; and anyone following these directions will be able to lay a cement sidewalk that will last for years without rearing up, cracking or crumbling.

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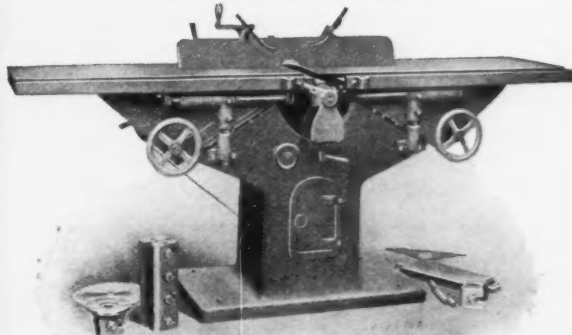
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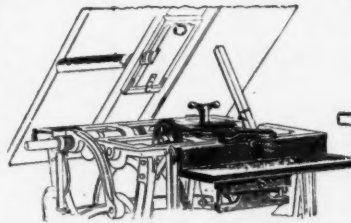
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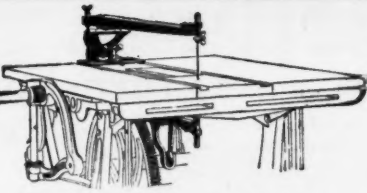
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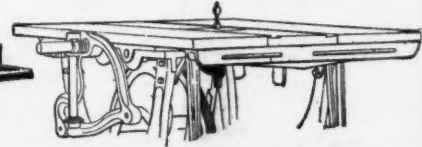
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"Union" Boring Attachment.



"Union" Scroll-Saw Attachment.

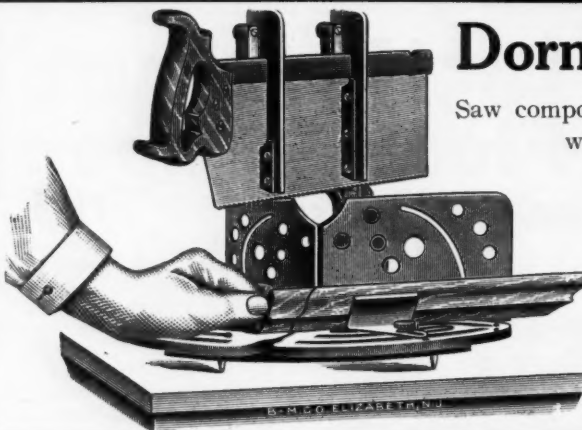


"Union" Moulding Attachment



(91-H)

No. 5 "Union" Combination Self-Feed Rip and Cross-Cut Saw.

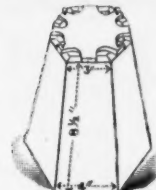


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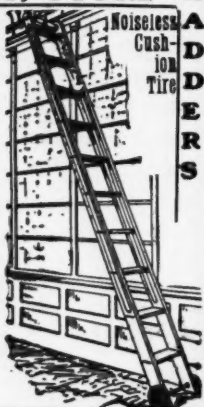
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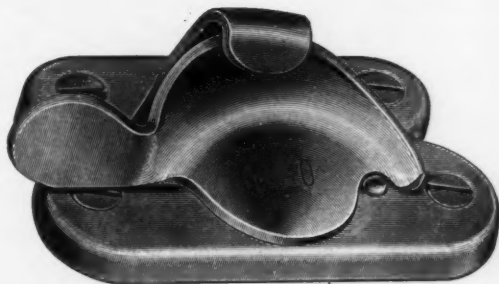
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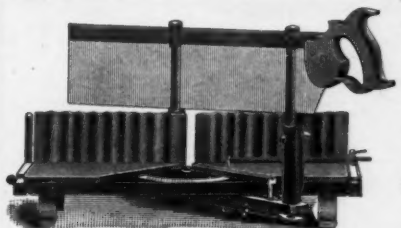
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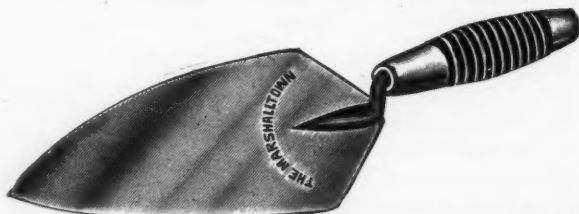
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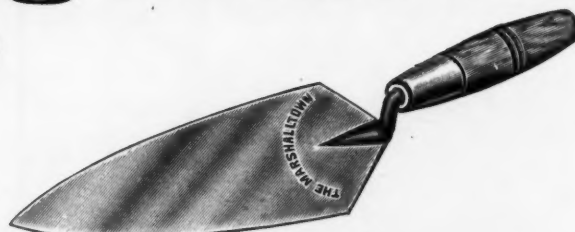
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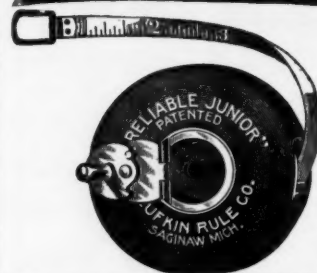
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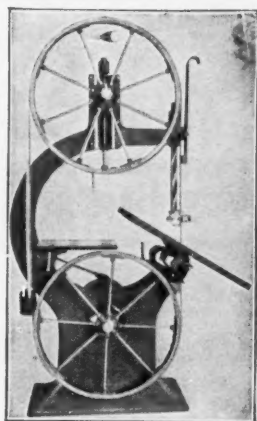
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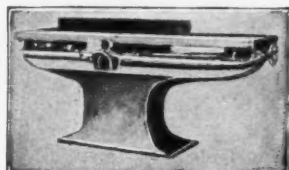
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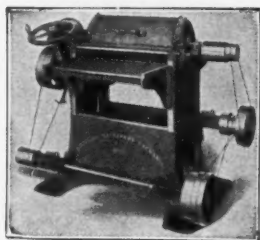
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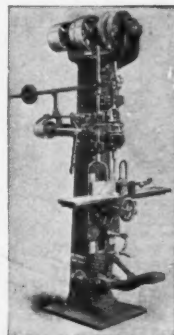
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Our monthly list of rebuilt machines (free to contractors) shows just the machines you ought to have. Write to-day.

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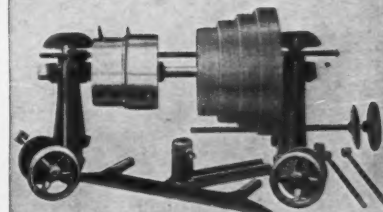
7-11 No. Canal St.,
CHICAGO



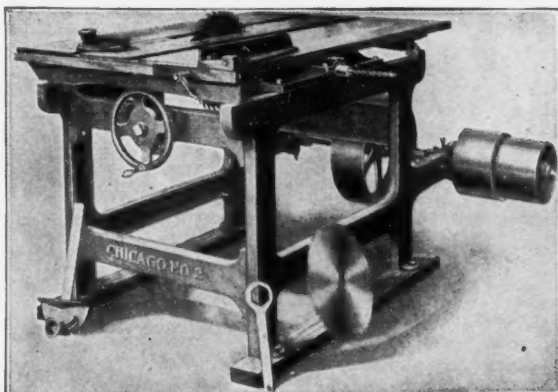
Chicago No. 10 Tilting Table
Improved Variety Saw Bench



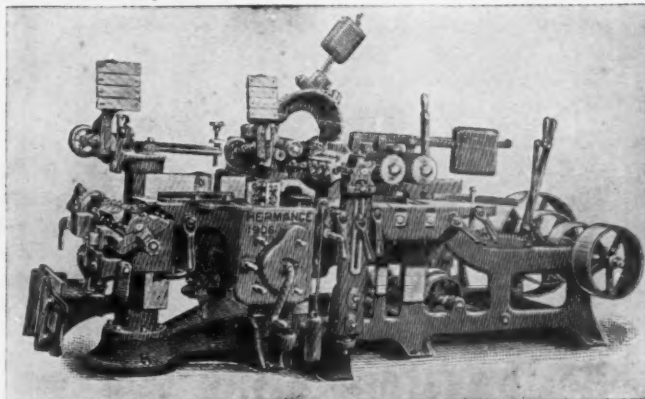
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16 and 20-in.



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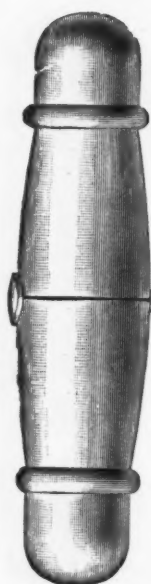


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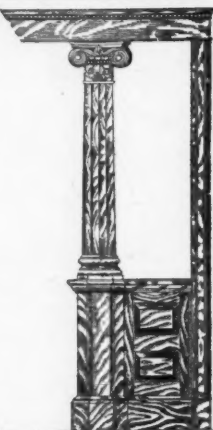
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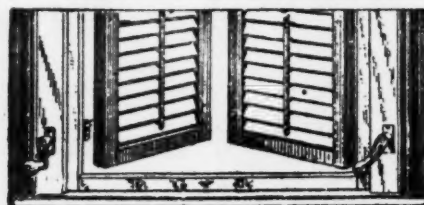
It contains many fine designs of modern Grilles, Columns and Consols.

Illustration at right shows half-section of Column design No. 552.



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WINDOWS—THEY ARE OUT OF DATE

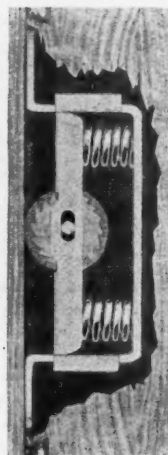
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The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

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CARPENTERS

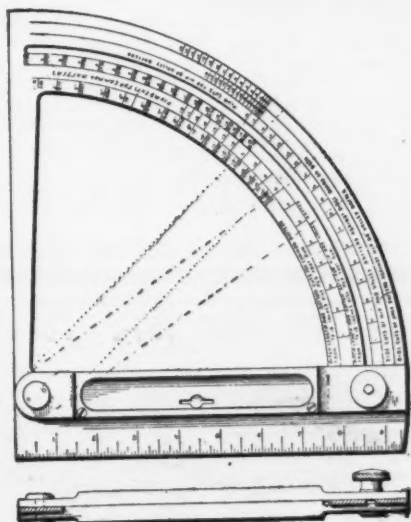
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We are Akin to the Gods

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We are Akin to the Ox



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Every bevel in the universe is contained in a quadrant; pass a line through it, from the center of the square to any degree or pitch, register on it the length (per foot run) and the opposite blades of the square will automatically (from that line) give bevels desired. See?

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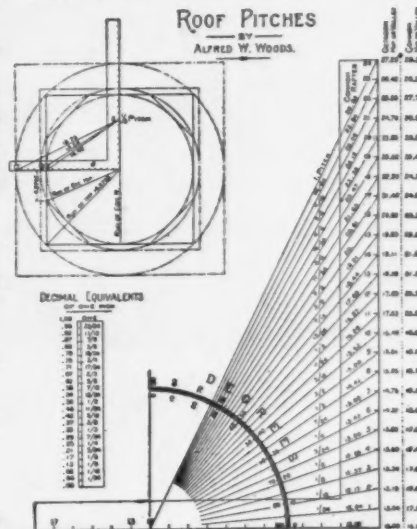
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The McIntosh Hardware Company	-	-	-	Cleveland, Ohio
Geller Ward & Hassner Hardware Company	-	-	-	St. Louis, Mo.
Witte Hardware Company	-	-	-	St. Louis, Mo.
Tenk Hardware Company	-	-	-	Quincy, Ill.
Townley Metal & Hardware Company	-	-	-	Kansas City, Mo.

Or Send \$3.50 to **A. O. CALHOON & COMPANY** Perry, Mo.

This illustration gives an idea of adjustment. The book of instruction will explain its full uses and application. Booklet of instruction with each tool.



GEO. H. BISHOP & CO., Lawrenceburg, Indiana, U.S.A.

Makers of

Fine Hand Made Hand Saws

The Purest of Quality Our
"GREYHOUND" Hand Saw



IN introducing our "GREYHOUND" brand of Saws to the trade, we have departed from our usual custom in naming the saw. This saw will be known as our "GREYHOUND" and will be the only Bishop brand of saw known by name.

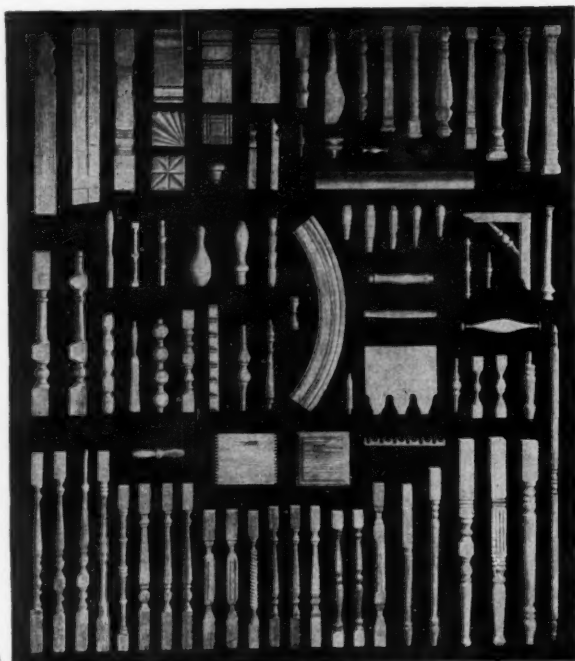


We have had a Chemist experimenting for years to originate a purity of steel with a fine grain and tough body that would stand up under such a fearless warranty as we place on our "GREYHOUND" brand of saws. We now have it. We know its worth as well as its value. As workers of steel we understand it. We had to name it and we have christened it Bishop's Refined "GREYHOUND" Steel, associating our trade mark with its name. We have in this "GREYHOUND" Saw blade a purity of steel that is tough, tempers accurately and even—together with the special way it is made—enables us to guarantee that this "GREYHOUND" brand of Saws will cut faster and run easier in all kinds of wood, hold its sharpness and set longer than any other makes of good Saws in the world. We Refund the Money if 30 days' trial does not prove our guarantee. Our pride is quality with an honest opportunity for the purchaser to judge. Each Saw is tagged with our warranty on it. No expense has been spared to make this Saw the most perfect in the world. We invite correspondence with anyone who has our "GREYHOUND" brand of saws in use.

Made in both straight and skew back. Packed One in a Box.

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

If this saw cannot be found in the Hardware Store and they will not order it for you, write to us. Price for 26 in. saw, \$3.00 delivered. We make anything in Carpenters' Saws.



MADE ON OUR Universal Turning and Variety Machine

It is the wide range of its work that makes this machine, wherever sold, one of the busiest and most profitable in the shop. It will quickly pay for itself in making balusters and other turnings at a big saving in cost, and as a general handy machine its variety feature gives it a value that only use can thoroughly demonstrate.

May we show you, without obligation on your part?
Then we have a proposition to submit—when you are ready.

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THE TRUE MITER BOX

Cut shows saw raised about two inches above bed and is held there until ready for use. When ready to use the saw, all that is necessary is to touch the lever or to take hold of the handle and the saw will drop down to the stock.

This miter box is so constructed that any piece broken or stolen can easily be replaced
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The Shelby Chief Double Acting Floor Hinge has solved the problem of easily get-at-able, hinges, impervious to water and dampness.

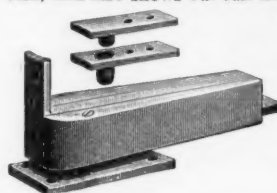
Doesn't go in the floor but rests on top.
Easily applied, and very economical.

The labor saving feature is being appreciated by carpenters and builders everywhere.

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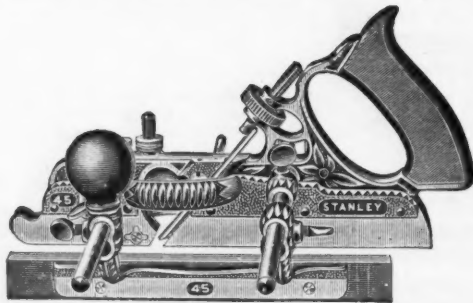
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STANLEY Adjustable

Beading, Rabbet and Matching Plane



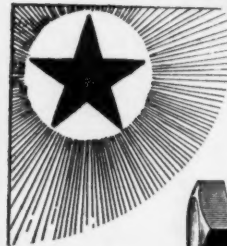
This Plane embraces (1) Beading and Center Beading Plane; (2) Rabbet and Filletster; (3) Dado; (4) Plow; (5) Matching Plane; (6) Sash Plane; and (7) a Superior Slitting Plane

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OVER 18,000 OF OUR
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25 doz. Clamp Fixtures bought by one mill last year. We ship on approval to rated firms, and guarantee our goods unconditionally. Write for list of Steel Bar Clamps, Vises, Bench Stops, etc.

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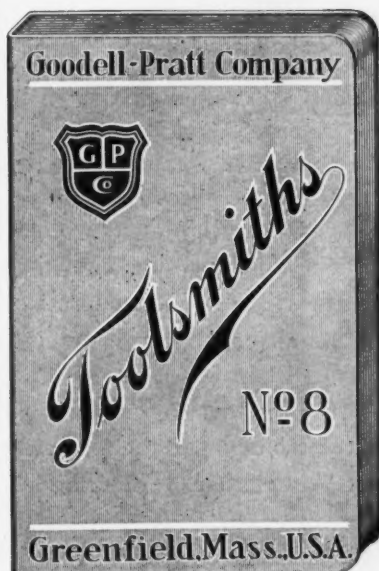
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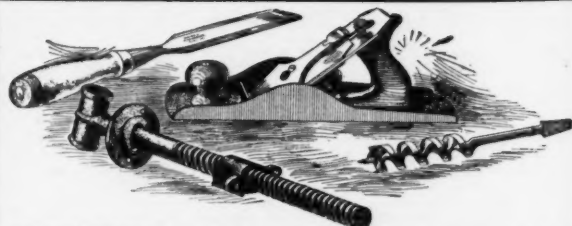
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This book and supplement contain 260 pages, illustrating and describing tools of interest to every worker. It will pay you to send in and get a copy free. Probably it shows some tools that you don't know about.

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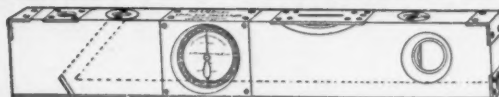
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An instrument with which at one glance you can get the true slant on any line or grade either in degrees, inches or percentage, or all at the same time, and will at once give the exact distance need to plum up to a true level.

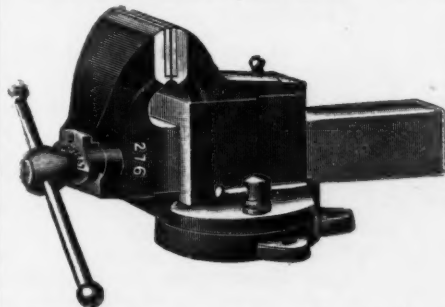
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The most practical, durable and convenient instrument of the day. The longitudinal recess which is shown in cut is well worth the low price of the instrument.

Write at once for large list of testimonials from all over the United States, and special introductory price given only to first applicants with privilege of taking agency.

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FOR SALE BY
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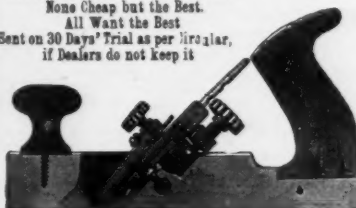
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None Cheap but the Best.

All Want the Best

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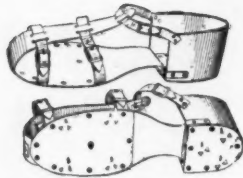
Don't force him to use the old style plane. He deserves the best. Get it for him if you don't want it for yourself, then return it if you want to. Circulars and a carpenter pencil free on receipt of addresses of ten or more plane users. Send for a plane now, and return it if you don't like it. Circulars and a carpenter pencil free on receipt of addresses of ten or more plane users, if this paper is mentioned.

GAGE TOOL CO., Vineland, N. J.

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Stowe's Shingling Kit

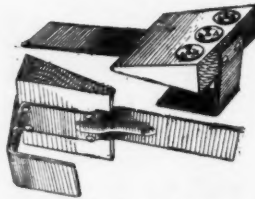
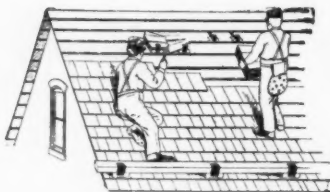
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All Builders doing Roofing shouldn't be without a pair of these Sandals. They

**Eliminate Danger
Protect Shoes
Pay for Themselves**

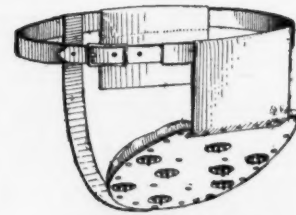


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Does not injure shingle
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No nail holes in roof

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Is arranged so the operator may shift from one hip to the other without adjusting, and not only insures a safe and comfortable seat, but saves clothing.

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Prices for any part or for complete kit quoted on application.

Coldwater Specialty Mfg. Co.

Coldwater, Mich.

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FOR RESIDENCES, HOTELS, OFFICE AND APARTMENT BUILDINGS

Absolutely sanitary, require no cleaning, never wear out or show the effects of use. Not affected by hot or cold water. The modern 20th century toilet and lavatory fittings.

PLATE GLASS TOWEL BAR



Price \$1.50

No. 141 24 inches, adjustable. Also made in 30, 36, 42 and 48 inch lengths at slightly higher prices.

Round glass towel bars, \$2.00

Adjustable glass towel shelves, \$3.50, \$4.00, \$6.00

We also sell plate glass with polished edges for table tops, any size, and glass push plates for use in fine residences and apartments, manufacture and re-silver mirrors, etc.

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FLY SCREENS

Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of fine screens.

Our screens have waterproof coped joints and the frames are weather proofed before the finishing coats are applied. Best grades of Wire Cloth, enameled, galvanized, genuine bronze, fastened by the most approved methods.

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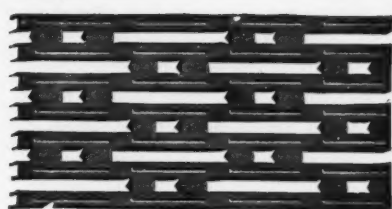
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Coming right down to the economy question Clincher Lath has got everything beaten.

As a practical man you can understand the principle by the illustration. Notice the level plastering surface—the construction that's different.

Sagging Is Impossible

Sagging between the studding is rendered absolutely impossible if Clincher Lath is used. Read what progressive carpenters have to say about it.

Easier to handle and easier to erect than any other lath on the market. Prove this by sending to Department R. C. for samples. Free to anybody interested.

The American Rolling Mill Co.
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A substitute for Lath and Plaster
Can be put on by any Carpenter.
It is Warmer, more Durable,
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Manufactured all 4 ft. wide, 8, 9, 10,
11, 12, 13, 14, 15, 16, 17 and 18 ft. long.

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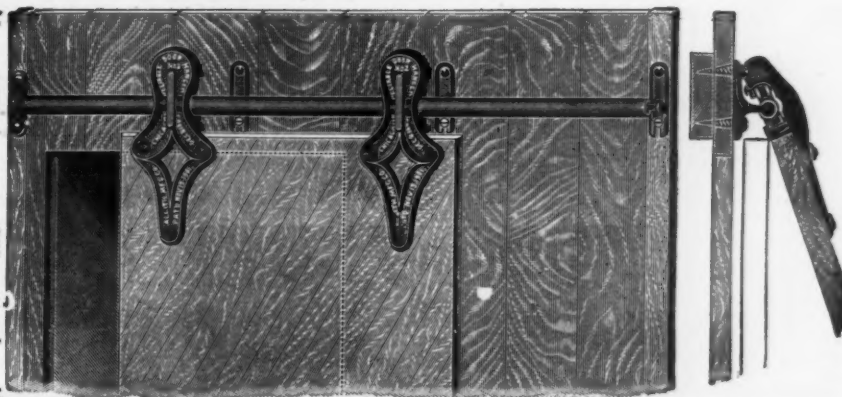
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"Pullman" Spring Sash Balances

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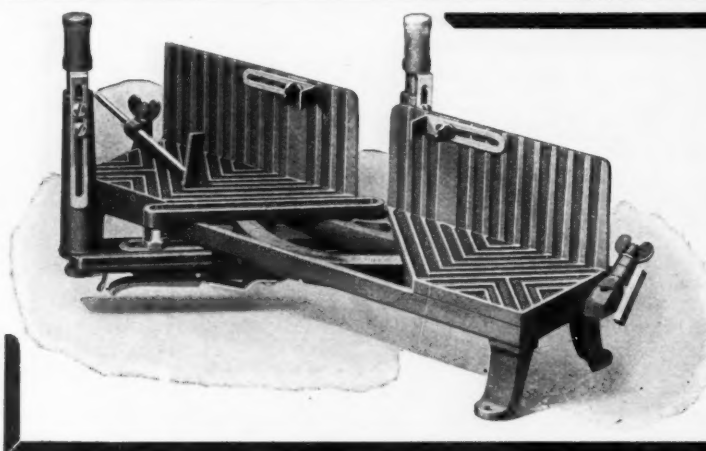
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MORRILL'S NO. 11 SAWSET.



IT WILL
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Being of recent design, this box includes all that is good of other tools.

Strong, convenient, absolutely accurate, and finished in dull nickel.

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American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill. under the Act of Congress of March 3, 1879.

Published monthly by

American Carpenter and Builder Company
185 JACKSON BOULEVARD, CHICAGO.

VOL. VI FEBRUARY, 1909 No. 5

The AMERICAN CARPENTER AND BUILDER is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.

Short practical letters and articles on subjects pertaining to the carpentry and building trades are requested.

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Furnished on application. The value of the AMERICAN CARPENTER AND BUILDER as an advertising medium is unquestioned. The character of the advertisements now in its columns, and the number of them, tell the whole story. Circulation considered, it is the cheapest trade journal in the United States to advertise in. Advertisements, to insure insertion in the issue of any month, should reach this office not later than the 20th of the month preceding.

BE A MIXER, but don't get mixed.

IT IS a good plan to talk quality. It is a better one to deliver it.

"DO YOUR weeping and growling at home," advises a writer. Not on your life, mister. Do your weeping and your growling in the alley, out back of the barn.

DON'T let what the other fellow does fret you, because it is not what he does, but what you do, that counts for most in the end. The thing to get out of the other fellow's doings is information to help you along, and not material for a grouch.

Talk Building Plans

IF THERE ever was a time when the carpenter-contractor could afford to stay quietly at home during the so-called *dull* winter season and hibernate, that time is now past. Like every other business man today the builder must get out and hustle if he is to land his due share of the business.

Also, going a step farther and learning a lesson from numerous other manufacturing lines, the builder should not be satisfied with the existing quantity of business that may *happen* to be at large in his territory. He must create new business.

A number of years ago a certain Michigan man conceived the notion that there ought to be money in prepared breakfast foods. True, there was seemingly no great demand for them; but there *ought* to be. What did he do? He hustled out and created a desire for the prepared food; he hit upon the points that would make people *want* it. And he has been raking in the profits ever since!

The modern idea is to make the people want what you have to offer. Stimulate the desire; and then satisfy it.

You are a business man and a manufacturer. It is your business to manufacture houses and barns and shops. You sell your product to the people. A certain number *have* to buy each season; necessity forces them to build. That's the work that comes to you of itself.

But the men who have to build are only about one-fifth the number who *ought* to—and will if their desire is stimulated in the right way. Mr. Wilbur's cartoon this month expresses the idea graphically.

You know a dozen men who ought each to be interested in putting up a new house, either for his

own use or for investment purposes. Take around a few sets of building plans and get him interested. He may find just what he wants—and you will get the business.

Now is the time to do it. When spring has come and the building season has opened you will not have the time. There should be no such thing as a "dull" season for the progressive builder. What has been called such is in reality his opportunity to get out and make himself known. It is his chance to make the people *want* what he has to sell.

Solicit business. Talk building plans.



For Us All

AN EXTRA good thing has escaped from the pen of Mr. Burdette in a little skit called "Advice to a Young Man." We would strike out the word "young" and pass it on with our full indorsement. None of us are ever too old to relish and to need such straight talk:

"Remember, my son, you have to work, whether you handle a pick or a pen, a wheelbarrow or a set

of books, dig ditches or edit a paper, ring an auction bell or write funny things, you must work.

"If you look around, you will see the men who are most able to live the rest of their days without work are the men who work the hardest. Don't be afraid of killing yourself with overwork. It is beyond your power to do that on the sunny side of thirty. They die sometimes, but it is because they quit work at 6 p. m., and don't get home until 2 a. m. It's the interval that kills. The work gives you an appetite for your meals; it lends solidity to your slumbers; it gives you a perfect and grateful appreciation of a holiday.

"There are young men who do not work, but the world is not proud of them. It does not know their names even, it simply speaks of them as 'old So and So's boy.' Nobody likes them; the great busy world doesn't know that they are there. So find out what you want to be and do, and take off your coat and make a dust in the world. The busier you are the less harm you will be apt to get into, the sweeter will be your sleep, the brighter and happier your holidays, and the better satisfied the world will be with you."

Prize Competition for House & Bungalow Designs

FROM all indications, a very great interest has been aroused concerning the AMERICAN CARPENTER AND BUILDER Prize Plan Competition, announced last month. Not only from architects, carpenters and contractors, but also from the general public and the casual readers of the magazine, letters have been received expressing a lively interest in the matter.

Some have intimated that a first-rate design might be expected from them—perhaps a prize winner; some have asked for further particulars; most have waxed enthusiastic over the prospect of soon having the prize-winning designs to study and make use of.

It is undeniable that the average man—and woman—has a keen interest in building plans, especially residence designs. Every American is potentially a home owner and a home builder. Some day he is going to build a house for himself and he is interested to know just how it should be arranged, so that he may spend his money to the best advantage. He is storing up ideas for future use—ideas concerning the material to use, the kind of finish, the arrangement of rooms and forms of construction. A special interest attaches, of course, to the winning designs in a prize competition. Ideas that have been passed upon and approved by a committee of competent judges are valued doubly.

These points are simply mentioned in passing in order to call attention to part of the good to be gained from this competition. The evident value—to those who draw plans—of the features embodied in these model residences, and the equally evident value, to the authors of the prize-winning designs, of having their signed work publicly presented in this way

is too well understood to need mentioning here.

Our Prize Competition for House and Bungalow Designs, as announced last month, covers two distinct types of dwellings: Class A—designs of frame houses, full two-story or story-and-a-half in height; and Class B—Designs of frame houses of the Bungalow or Cottage type, all rooms on one floor. The cost to build must not exceed, in either class, \$3,000. They may, however, be designed to be built for less than \$3,000 and will receive equal consideration with the rest. The construction and finish must be substantial and first class in every case.

\$200 will be distributed among the eight prize winners.

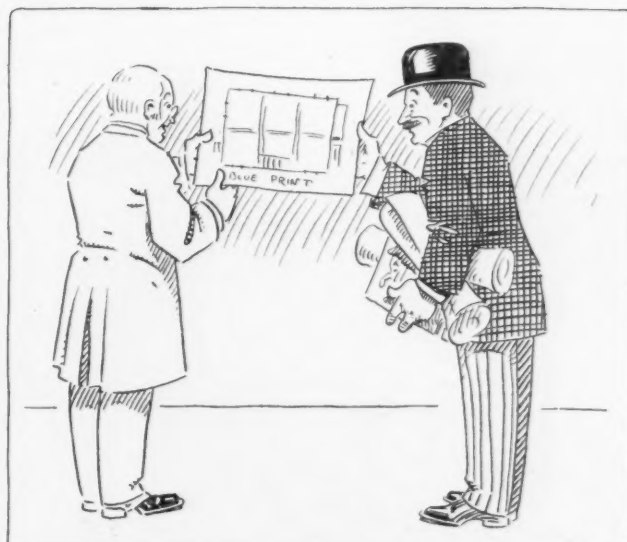
We can not take space to give again here the details, requirements and conditions for this Competition. Probably most are familiar with them already. They were fully explained on page 384 of the January number. We do want to call attention again, however, to the time limit which has been set. This competition will be held open for all designs reaching the office of the AMERICAN CARPENTER AND BUILDER at Chicago, Ill., up to and including MARCH 1ST, 1909. That gives barely one month more, now, to get in your design—which is just time enough.

We would urge upon all the importance of joining in this competition and the advantages to be derived from it. We are making elaborate preparations to publish the Prize Winning Designs in the April number, making them a prominent feature of our Fourth Anniversary Number. We are all looking forward to something exceptionally good.

How A. Hustler Got Business



Ha! I've an Idea: I'll get out and do some soliciting



Here's Jones, this design is just what he's been looking for



Smith has money and needs a new house. I'll interest him



This for Brown—He's been "Figerin on Buildin'" for years



May 1. My Schedule is full for the Building Season—Glad I got out and Hustled



George Washington—Architect and Builder

By Waldon Fawcett

ALTHOUGH it is well known that George Washington played a most important part in selecting the sites and also in advising as to the architectural designs of leading public buildings at the seat of government, such as the Capitol and the White House, few persons realize to what an extent the Father of His Country was entitled to the designation, "architect and builder," throughout almost his entire life. Aside from the public edifices, in the creation of which he had a hand, he was wholly or partially responsible for the design and

construction of a number of private residences—almost all of them notable examples of Colonial architecture.

It is perhaps not strange that the first President of the nation should have entered these fields of activity, when we take into account the influences that co-operated to that end. In the first place, George Washington was, as a young man, a surveyor by profession, and he naturally developed exceptional judgment as to suitable and advantageous sites for buildings of various kinds. Later, as his worldly



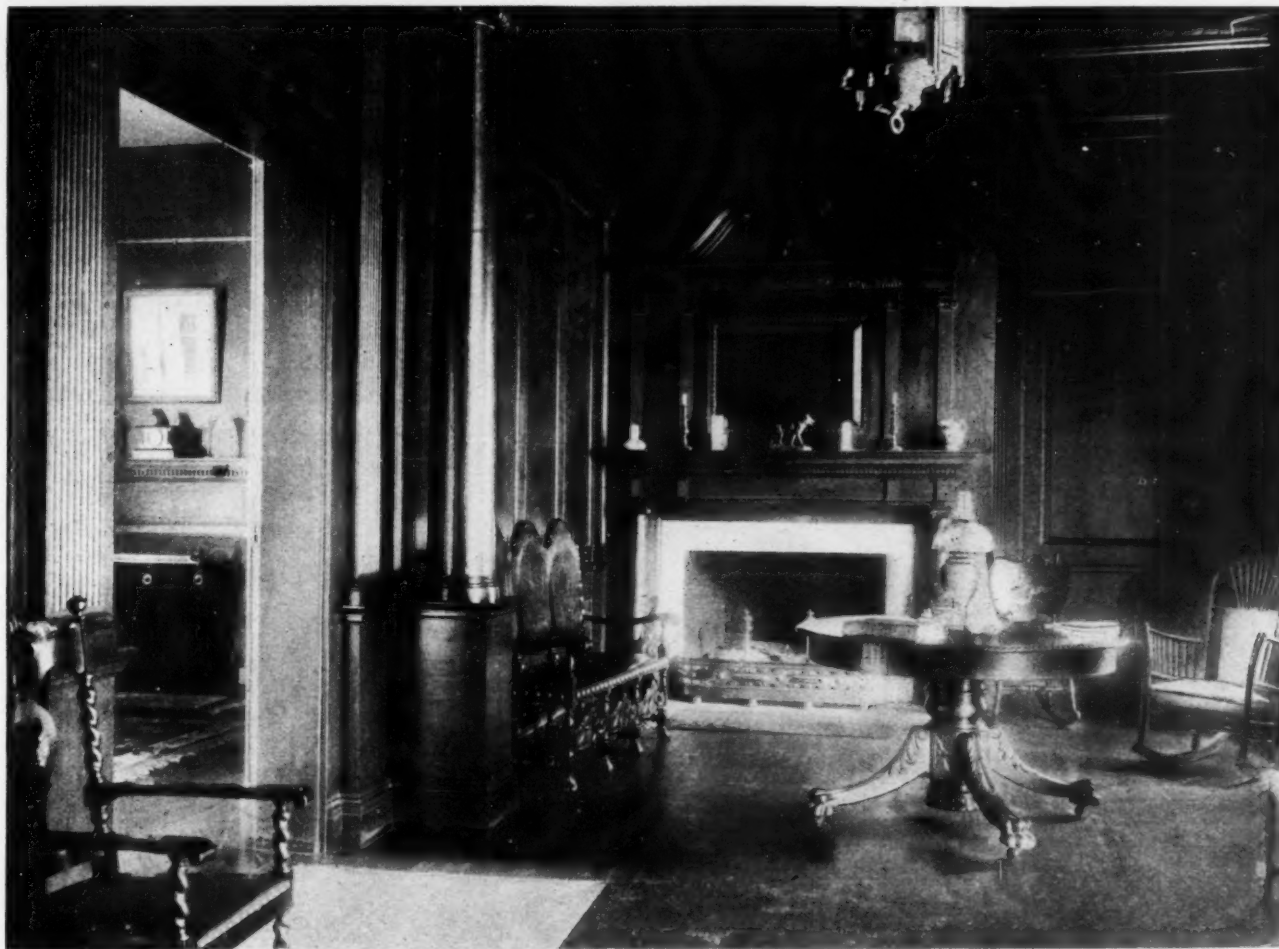
Claymont—One of the Most Famous of the Washington Homes

wealth grew and his property holdings increased, he came of necessity to give practical attention to building construction. Indeed, every southern planter of the Colonial period, living as did Washington, in the comparative isolation of an immense plantation, had need to be self-sufficient in designing and superintending the construction of brick, stone and frame structures—perhaps not actually the pretentious manor house itself, but at least the supplementary buildings which were always being added, and which made each estate a small community in itself.

Thus, while it was Washington's half-brother, Lawrence, who built the mansion house at Mount Vernon,

right of George Washington to the title "architect and builder" are located in the Shenandoah valley in what is now West Virginia. The whole territory, of which Charlestown, W. Va., is the center, is of especial interest in this connection. George Washington made the original surveys of all that land for Lord Fairfax and there, on a commanding site, facing the Blue Ridge mountains, he built Harewood Mansion for his eldest brother, Samuel. Harewood was built in 1756-1758, the construction extending over three years. George Washington used this property for a time as his summer home.

Undoubtedly the finest of all the Washington homes,



Magnificent Interior Finish at the Washington Homestead

the General, after going there to live, made numerous alterations and additions, both to the main structure and in the outbuildings, which evidenced his ability in this sphere. When Nelly Custis, his adopted daughter and favorite, was married, he erected for her and her husband, at a point about five miles from Mount Vernon, a splendid mansion known as Woodlawn, which is yet standing in an excellent state of preservation. Not only was this admirable country seat erected through the generosity of George Washington, but tradition has it that he had much to do with planning the mansion and personally supervised its construction.

The structures which most clearly establish the

from an architectural standpoint, is Claymont, which is situated two miles from Harewood. While George Washington was not the builder of Claymont, he prepared in detail the plans from which it was constructed. The house is today in a perfect state of preservation and was, until his death a few years ago, the home of Frank R. Stockton, the well-known novelist.

The manor house at Claymont consists of a central building of brick with two commodious wings, and on each side a separate two story building, connected with the long rectangular building by a brick-walled court yard thirty feet square. The connected buildings, all constructed largely of yellow brick, have an



Andley—A Quaint Old Home of the Washington Family

aggregate length of 250 feet. On the north front, only a stone entrance portico relieves outlines that are rather plain and severe; but on the south front there is a broad ninety foot veranda on both floors.

In this mansion, as in most of those designed or constructed by George Washington, the hall is very spacious. At Claymont this apartment is parallel with the front of the house, and forty feet in length by



Andley—The Interior

twenty feet in width. The walls are wainscoted in oak, the elaborately carved panels extending to the ceiling, which is finished in the same wood. Opening from the hall, opposite the main entrance, are the library and drawing room, and through an arch under a graceful staircase a passage leads to the dining room, adjoining which is an ante room known as the tea room.

The masterpiece of the house, and a great tribute to Washington's architectural ability, is the study which adjoins the library. This apartment occupies the full width of the building, and consequently has windows on three sides. A large fireplace occupies

imprisoned by the construction of the solid walls which surround it.

About a dozen miles from Claymount, and just over the Virginia line, stand Audley, another of the historic homes of the Washingtons. While not as pretentious in many respects as the house just described, it is yet full of suggestion for present-day architects and builders. The Audley manor house is a one story structure with a ground floor plan suggestive of the letter H. The entire front of the house is given over to a drawing room and dining room, while the sleeping apartments are in the other section of the house, the two sections being connected by a



The Hall at Claymount—Designed by Washington

either end of the room. A novel feature of the house is found in the arrangement of the doors, almost all of which are made to slide into apertures in the walls instead of being hinged. Claymount also has its architectural freak or mystery, known as the "cell of the sunken cupboard." The cell is a dungeon-like apartment in the basement, or rather several feet below the level of the basement; it has no window or opening of any kind save one narrow doorway. Almost the entire space in the cell is taken up by an immense sideboard, elaborately carved. Obviously, this massive piece of furniture could never have been taken through the narrow doorway, but must have been placed in its present position and deliberately

long, broad hall. The impress of George Washington's architectural talent is also to be found in the mansion at Arlington (now our greatest national cemetery), located a few miles from Mount Vernon. This structure was not erected until 1802; but the builder, Washington Parke Custis, was the adopted son of George Washington, and resided at Mount Vernon for many years, during which time he consciously or unconsciously adopted many of George Washington's architectural ideas, which later found expression in the plans for Arlington mansion.



No man ever acquired a lasting brand of popularity by knocking.

The "Picture" House and its Possibilities

VARIOUS ARTISTIC FEATURES THAT SHOULD BE CONSIDERED WHEN MAKING PLANS FOR A HOUSE—POINTS ILLUSTRATED IN ATTRACTIVE COTTAGE DESIGN

By C. Bryant Schaefer

THE houses that people most admire are those which have gathered about themselves—usually through years of quiet family life—many of the accessories of the typical old homestead, which have grown up into complete harmony with their surroundings, and, through long practice, have become perfectly adapted to the art of housing a home. Many people, feeling this, try to buy such features ready made and have them included into the contract when they build. The result is what we might call the "picture" house. They have become a distinct and important feature of late years in the building industry. They may or may not be a success, according to circumstances. But if the plans are carefully drawn,

freely followed as circumstances and occasion offer.

The house is shown on slightly rising ground. This makes the front look a little higher than otherwise. Care has to be taken in selecting the stones at the foundation base. As shown, they are very attractive; but much depends on whether suitable sizes can be secured. Another artistic touch is the arbor in the rear, extending the outline of the building. The terrace wall on the sides of the cottage, or some similar feature, gives breadth to the base and relieves the narrowness of the plan.

Suburban lots are often encroached upon by city methods of construction. The land becomes necessary for flat buildings and the cottage builder may be glad



A SUBURBAN BUNGALOW.

showing a dwelling of pleasing proportions, tastefully finished and having a few mildly artistic touches, first the builder and then the owner will undoubtedly have an easier time than otherwise producing a satisfactory result.

The accompanying plans have been prepared along these lines. The elevations and the floor plan show the practical features. The general view, on the other hand, shows what should be accomplished later by the individual taste of the occupants. A perspective like this is always helpful in studying how to secure the best results. It is a guide that can be

to find his home located on a twenty-five foot space. To meet this contingency the plan is narrow enough to allow passage and light on both sides if the neighborhood should become cramped for room. The outside dimensions are about 20 by 50 feet.

Features of the plan are a large living room which is suitable for dining room, sitting room and parlor. The chambers, bath and closets are convenient. The work room will be found convenient in connection with the house as well as necessary for out-door tools.

Three important conditions have been observed in the design that make the carpenter's work easy.

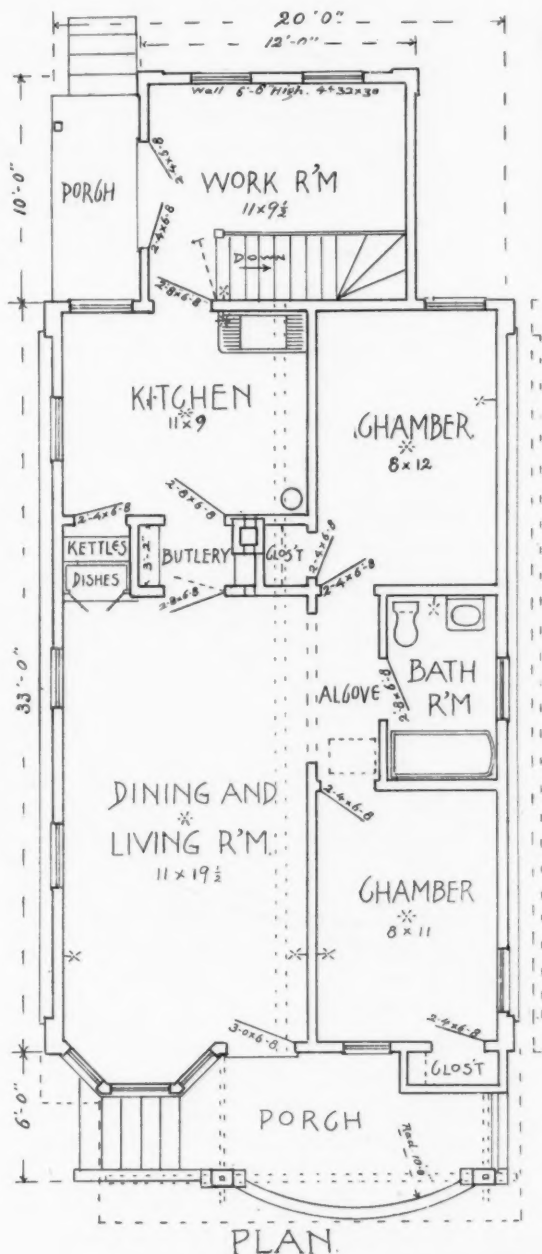
Standard sizes of lumber will be found to fit in every case. The stuff will space out even in laying. The house can be entirely finished in the rough, as is customary, then the builder will readily see how to fur out for the artistic features. Even the dormer window does not require any roof framing.

The foundation walls are only carried 6 inches above grade, the outside studding extending below the first floor, as shown on the section.

The face of the basement is furred out for wire lath and cement plaster. The cement pilasters at the

dow should be of undressed stuff to match the shingles. The window sash should set back about a foot.

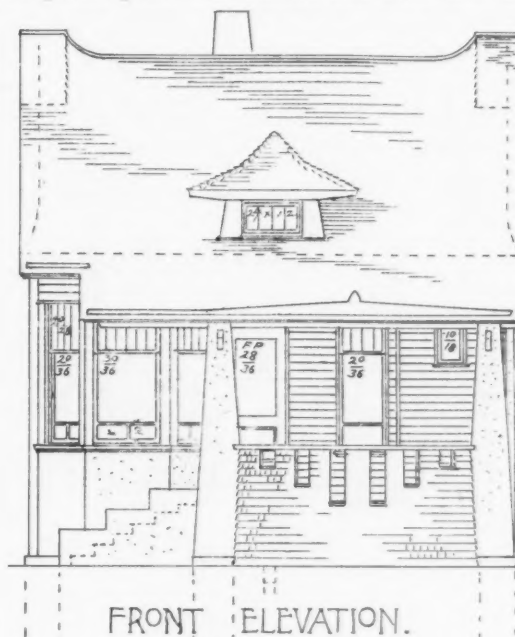
The porch posts are framed for wire lath and ce-



corners are formed by continuing the basement work up to the beam cornices.

The beam over the windows is boxed out flush with the pilasters and the shingles splayed out over the top. This will be seen by again referring to the section.

The upper part of the gable front is built on top of the roof sheathing and shingled continuously from the main roof. The jambs and beam in the dormer win-



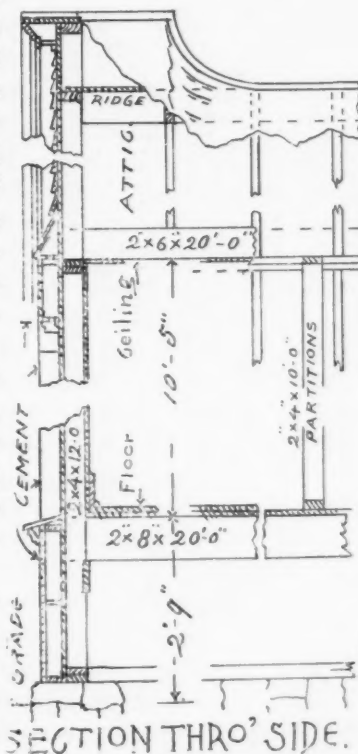
ment. The segment rail front only requires a form at the bottom, the floor and the top. It is then sheathed perpendicularly, except the openings, and shingled.

In a small house it is best to use narrow siding and lay the shingles about 4 inches to the weather.

The color scheme to be carried out on the exterior should harmonize with the cement colored features. It can be tinted different shades of grey, tending towards the warmer colors preferably, or beginning with grey, extended into grey brown and red, or grey blue and green. This would produce a cheerful effect that would harmonize with most any natural surroundings.

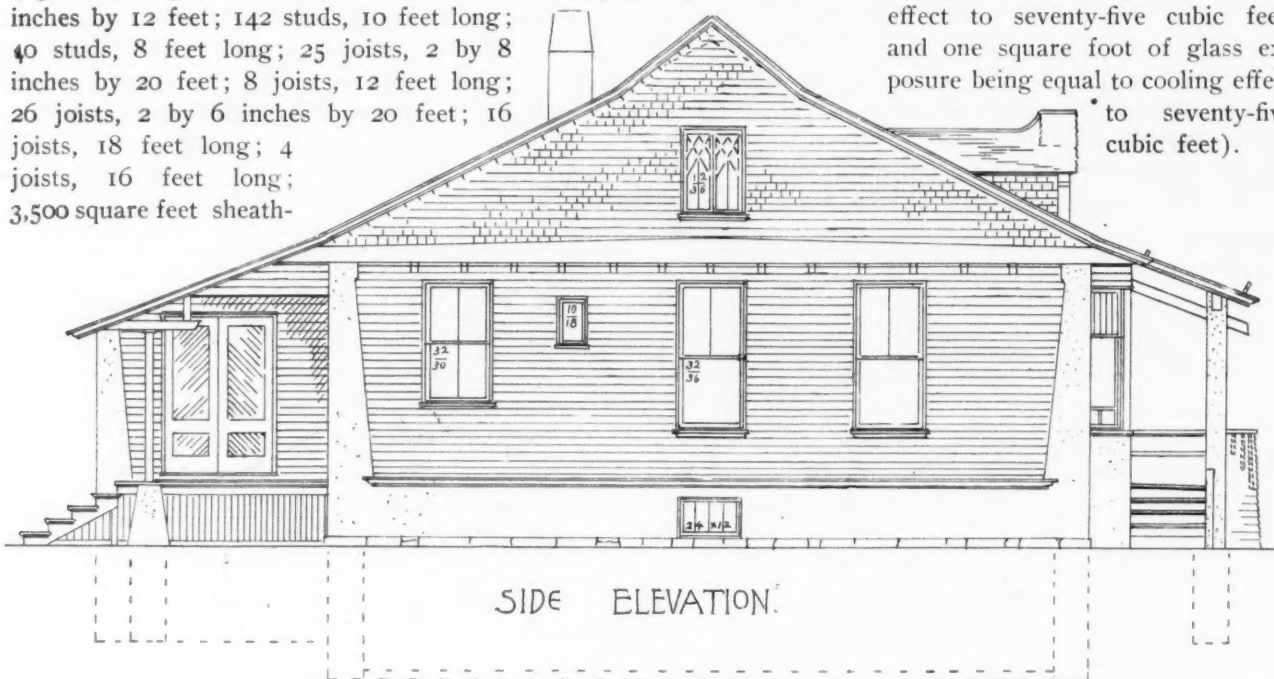
In regard to the grading and additional features shown in the perspective, it depends on the lay of the land and the materials most convenient.

Sometimes the surroundings are quite formal, with cement walks and paved streets, or the location may be a country road. The result can be made very pleasing in any case.



The following quantities of lumber will help in estimating: Three cedar posts, 6 inches by 5 feet; 4 girders, 6 by 10 inches by 8 feet; 110 studs, 2 by 4 inches by 12 feet; 142 studs, 10 feet long; 40 studs, 8 feet long; 25 joists, 2 by 8 inches by 20 feet; 8 joists, 12 feet long; 26 joists, 2 by 6 inches by 20 feet; 16 joists, 18 feet long; 4 joists, 16 feet long; 3,500 square feet sheath-

feet is, to the cubic feet in each room add for wall and glass exposure as follows (one-tenth of each square foot of wall exposure being equal in cooling effect to seventy-five cubic feet, and one square foot of glass exposure being equal to cooling effect to seventy-five cubic feet).



ing, including floors; 700 square feet hardwood flooring; 130 square feet plank porch flooring; 625 square feet siding, and 15 squares shingled surface; also furring pieces, two rows of bridging and some bracing in the attic. Two hundred and thirty feet of $2\frac{1}{2}$ by $\frac{7}{8}$ inch molding will be enough for both eaves and water table. The frames and other pieces of mill work can be easily counted.

Estimating Air Space for Heating

The problem of furnace heating and ventilating is a fascinating study, and the more we indulge in this study the more interesting it becomes.

The basic or underlying principle that governs the experienced furnace man is a strict adherence to the rules entering into the problem, and if his conclusions are reached by those rules on a logical basis, instead of the use of "thumb rules," failure and condemnation will be replaced by success and commendation, and the agreeable outcome of success and commendation is increased business and larger profits.

One of the first rules a furnaceman should learn is that of determining the amount of cubic feet of air space to be heated, and in this calculation it is necessary to take into consideration the relation of exposed walls and exposed glass surface to the room or building to be heated. Some consideration, too, must be given to the relation of an adjoining unoccupied property, the loss of heat by transmission in this party wall must be overcome by a proportionate allowance in the total equivalent cubic feet or in the capacity of the furnace, for extra firing when that feature becomes necessary.

A simple rule for determining the equivalent cubic

First, obtain the cubic feet by multiplying the length by the width of the room and by multiplying this result by the clear height of the ceiling.

Then multiply ten per cent of the net wall exposure by seventy-five, and add this amount to the total.

Then multiply the glass exposure by seventy-five and add this amount to the total cubic feet, and the cubic feet, the multiplied ten per cent of the net wall exposure, and the multiplied glass exposure will constitute what may be called equivalent cubic feet; that is to say, the total will be equal to the cubic feet to be considered in determining the size of the furnace, the size of the warm air pipes and the size of the registers that will be required to heat the house.

Steam Defends Bank Vaults

Ways and means are constantly being devised to defeat the plans of the bank burglar and the safe blower. The latest inventions are found in the building of the National City Bank of New York, recently occupied, and into which was taken \$50,000,000 in currency and securities valued at \$500,000,000. Blasts of steam, superheated and kept under such pressure as to flood the entire building in a few minutes, is the main scheme in a deadly system of defense in that building, now said to be the most impregnable financial fortress in the world.

Around the bank's great safe are tons of armored steel, reinforced concrete, iron rails and miles of sensitive alarm wires, in addition to a system of pipes that, should all other means fail to frustrate robbers, would snuff out the lives of scores of burglars should they continue to work near the safe, or it would stand off an army of hundreds of men.

is not yet in sight, but perhaps this does not worry us so much as it does some of those who are trying to reap the harvest from the seeds we have scattered along the way, by offering a substitute for the steel square, telling the builders that here is what they need and should have; that their device supercedes the steel square in simplicity and usefulness. Nevertheless, the steel square, as homely as it is, is an instrument of unbounded utility and one that has stood the tests and has come to stay. The patent offices at Washington contain scores of records of patents taken out on various kinds of framing tools on which the owner expected to reap fortune and fame; but in most

cases were compelled to see their hopes blasted and their instruments placed on the shelf among the has beens. It is safe to say that if their owners had been better acquainted with the possibilities of the old steel square, they would have been both wiser and richer.

But we were talking about circles within a circle and as we can see no stopping place as to what may be done in this respect, we will conclude our remarks by constructing a balloon,—on the square of course,—and take a voyage in quest of some other phase of the subject to talk about. So here we go,—“Up in a balloon, boys, up in a balloon, sailing among the stars all around the moon.”

The Proper Care of Tools

WORDS OF SOUND ADVICE FOR WORKMEN, YOUNG AND OLD—THE IMPORTANCE OF KEEPING ALL TOOLS IN PROPER SHAPE

By G. J. Shuster

IT IS an old saying that a workman is known by his chips; but I would rather judge a workman by the tools he uses and by the quality and quantity of the work he turns out. The man with a good, well-kept set of tools is most always a good, careful workman. On the other hand the man with a poorly kept set of tools is invariably a careless workman, and quite often a bungler besides. The man who takes pride in keeping his tools in shape also takes pride in doing his work well.

Now it must be apparent to any one who has a fair knowledge of workmen and of workmanship that one can do more and better work with good, well-kept tools than with poor ones; therefore is worth more to his employer, and invariably gets the best work on the job. The careless man, on the other hand, with a poorly kept set of tools, gets the heavy and rough work and rarely ever gets to be more than just a common workman.

In speaking of tools I don't mean that it is necessary to get all the latest patterns, nor all of the tools made for the carpenter; but I would advise getting *good* tools and all those necessary to do the work accurately and correctly, you are called upon to do. It is poor policy to retard your progress with cheap and inferior tools.

Give your tools a general overhauling at least once a month and put each tool in perfect order whether you are using it on the present job or not. If you don't do this you will soon find yourself with hardly a tool in your entire kit in proper shape for work. Consequently you will consume more time in doing a poor piece of work than you would otherwise in doing the work well.

For instance, take a saw that has been carelessly filed; it will not do clean work, and requires extra strength and time to use it. The same can be said of plane-bits and chisels that have been carelessly dubbed off until their cutting edge is spoiled.

Now, it is not an uncommon thing to find a journeyman carpenter (*and a boss carpenter as well*) with a chest of tools that more resembles a lot of scrap iron

than they do implements and tools to work with.

I would urge the young carpenter to form the habit of keeping his tools in shape. Have a place in the chest for every tool and keep every tool in that particular place. Then, when you want a tool, you know just where to find it. Don't dump your tools into the chest any old way! Some do, and then, when wanting a tool, they root around in their rusty pile of scrap iron until they find it; even then it isn't in shape to work with and they make another haul, dig up an old oil stone full of nicks and with the center dug out, and give the tool to be used a few strokes or a lick, and are ready to proceed!

Such a workman with such tools couldn't execute a good finished piece of work if his eternal salvation depended on it. He has gotten in the careless, slipshod habit of doing his work any old way.

So I would say to the young workman,—don't let these careless habits fasten themselves upon you; if you are a little inclined to be that way, then break away at once, for you will never make a finished workman if you don't. Have just tools enough with which to do your work accurately and quickly; make it a point to keep them in good working order and ready for use. Study your tools, learn to handle them correctly and you will soon be able to turn off work with accuracy and speed, thus commanding a better price for your service than that of the fellow who thinks any old tool in any old shape is good enough.



There is a railroad in China called “Dongdang Lunchau.” We have heard some American railroad officials spoken of as such.



Nearly Bath Time

The following is a verbatim copy of a letter received by a local real estate agent from a tenant in the fourth ward, says the *White Plains Daily Record*:

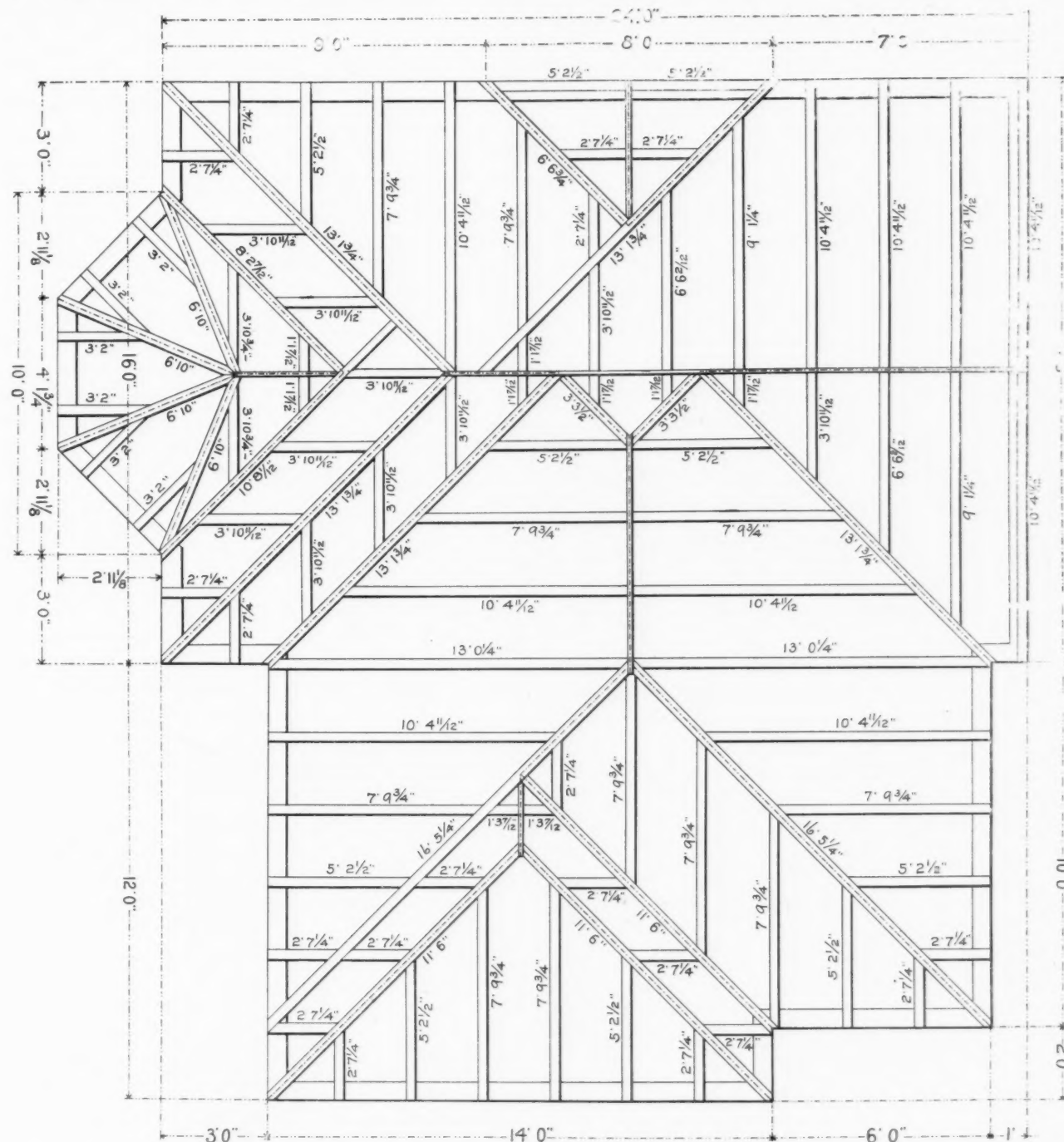
“Dear Sir: I wat them seller steps figsd right of—my wife near fel down last nite and like to brake her nec—Please send a Blumber and figs our bath tub it soon be time now for us to use him agen.”

Framing Plan for Hip-and-Valley Roof

ALL THE MEMBERS OF THE COMMON HIP-AND-VALLEY ROOF DETAILED AND THEIR FRAMING BY MEANS OF THE STEEL SQUARE EXPLAINED!

A SUBSCRIBER from Burlington, Iowa, requests the plan of a common hip and valley roof, detailed to show all the different rafters with their lengths and cuts that usually enter into its construction. As no special rise is requested we will assume it to be 10 inches to the foot. The accompanying plan is a fair arrangement of the different

what the rise is. In other words, if there was no pitch given the roof at all, the plan would show just the same, and the side cuts for hips and jacks would all be on an angle of 45 degrees, and their lengths would be as per the scale of the plan. That is, the first jack being placed 2 feet from the corner, its length would also be 2 feet; and these proportions



rafters that usually enter into the common hip and valley roofs, such as used in residence work.

The view taken is from a point directly above. Consequently there is nothing in the plan to show

taken on the square, as 12 and 12, will give what is generally called the side cut, but in reality should more properly be called the top cut. This, the reader will observe, is the regular miter, which is simple

enough; everybody understands so far, but when a pitch is given this simple rule is usually forgotten. In this example, the rafter having a rise of 10 inches, it has a gain of $7\frac{1}{4}$ inches in two feet, and this added to its run makes its length 2 feet $7\frac{1}{4}$ inches. Then the proportion of 2 feet and 2 feet $7\frac{1}{4}$ inches taken on the square as 12 and 15 $\frac{7}{12}$ inches will give the cut. The side on which the larger number is taken, gives the cut. If the point of the jack is removed by cutting on a line parallel to the seat, it will be found that the angle of the cut is still 45 degrees, or just what the angle shows in the plan. The same rule applies for this as for the cut of the hip or valley. It also applies to the jack for an octagon, or any other corner.

In this example there is shown an octagon bay and the side cut of the jack would be to the proportion of 1 foot and 3 feet 2 inches. The first because that is the space that the foot of the jack is from the corner and the latter represents the length of the jack. This jack, like all others, is simply a part of a common rafter; reduced to a one foot basis on the square, it is 5 and 15 $\frac{7}{12}$ inches.

The lengths of the rafters are given from the edge of the plate to the center lines, as shown by the dotted line on the hips and valleys. Therefore for the common rafters a reduction should be made for one-half the thickness of the ridge piece by measuring square back that amount from the plumb cut.

It is not necessary to make any reduction for the jacks that rest on a plate, because the lengths given; if used for the long side, will make the jacks space all right, since the length is supposed to be taken along a line at the middle of the back. But a reduction equal to the diagonal of the thickness of the hip or valley, should be made for the jacks that come in between a hip and valley. This also applies to the side cut of the hip where it rests against the ridge piece by deducting half of the thickness of the diagonal of the piece. However, this is of small concern and more than likely the variation, if not made, would go unnoticed.

In this example are shown some self-supporting hip and valleys, formed by letting one run by the other to a solid bearing. This is an important matter, which is too often overlooked; and consequently a sagged roof is the result. There are other points about this plan that might be brought out. The figures to use on the square for a one foot basis are as follows:

12 and 10—seat and plumb cut of the common and jack rafters.

12 and 15 $\frac{7}{12}$ —side cut of the jack.

5 and 15 $\frac{7}{12}$ —side cut of the jack.

13 and 10—seat and plumb cut of octagon hip.

17 and 10—seat and plumb cut of hip or valley.

17 and 19 $\frac{3}{4}$ —side cut of hip or valley.

The study of a rafter plan like this is valuable, for it contains practically all the elements of any roof.

Simple Rules for Stairbuilders

Several rules are in use among stairbuilders for determining the proportions of treads and risers, the one generally used being that the tread and rise multiplied together should equal 66. Thus an 11 inch tread should have a 6 inch riser. This is easily remembered and gives an easy step.

Another rule is based on the fact that an easy pace on the level is 23 inches. In going upstairs, however,

a person passes upward as well as forward at the same time, and the rule is that "twice the rise, plus the tread, should equal 23." This gives very good results in practice.

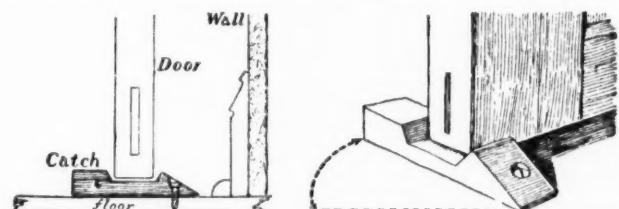
A good rule for getting proper head room in a flight of stairs is to count down 13 or 14 steps from the top, and plumb up for the face of the trimmer. This gives good clearance for a tall man. Nicholson's famous old Scotch work on building construction (1805) gives another good rule, which is shown in the accompanying sketch: With the bottom front edge of the trimmer as center and a radius of 6 feet describe an arc of a circle, from which the nosing line must be kept clear to give good head room under the trimmer.

Nicholson's rule for finding the thickness of trimmers is also useful. It was "to add to the thickness of trimmer one-eighth of an inch for every joist set into the trimmer." This works out very well indeed.



A Practical Door Stop

A home-made contrivance to hold the door open may be made from a small piece of wood cut like the illustration, says the *Woman's Home Companion*. It should be screwed loosely to the floor where the edge of the door comes when open. When the door is opened, the stop can be brought around with the



foot, so that the notch is slipped under the door; then the ends prevent the door moving either way. This can be used only where the door swings back against the wall. It may be painted the color of the wood-work, and when not in use it fits back to the wall, thus making it scarcely noticeable.



CONCRETE CONSTRUCTION

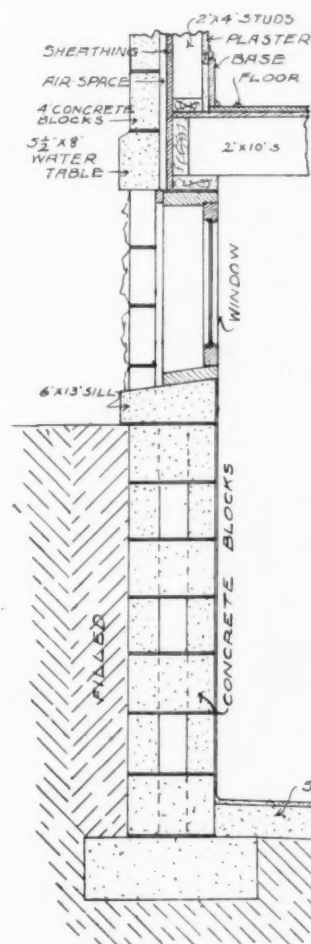


Concrete Foundation Work

THE ECONOMICAL USE OF CONCRETE FOR ALL CLASSES OF RESIDENCE FOUNDATIONS AND FOR BASEMENT FINISH—HOW THE WORK SHOULD BE DONE

FROM the point of view of the ordinary builder, that great and important class of workmen known as the "contracting-carpenter," the builders of American homes, the most important of the many uses of cement concrete is, without doubt, that for foundation work. Except in a few localities where native stone is to be had very cheaply, all foundation walls are coming to be of concrete. The builders have found that for strength, warmth and enduring qualities, foundation and basement work in this material is far superior to brick or to wood piles; and for economy and ease in handling, it has an advantage over stone.

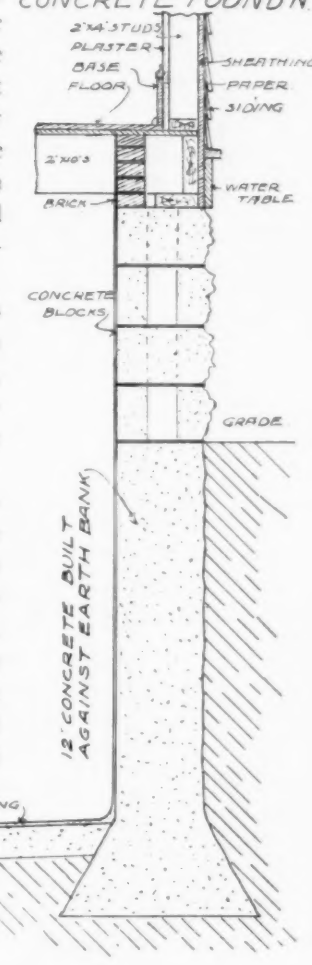
CEMENT BLOCK VENEER ON BLOCK FOUNDATION.



up in the regular way with cement mortar. When finished, the wall may be thoroughly waterproofed by painting the exterior face with a paint made of Portland cement and water. The inside of the wall should also be finished with a quarter inch coat of neat cement.

The second type or combination wall is shown to the right. This is very good, especially where the soil is firm; for, in that case, only the inside forms need be used. Excavation is carefully made, stopping just at the outside foundation line; the bank is hollowed back in under, for a sloping footing below

FRAME CONSTRUCTION ON COMBINED BLOCK & POURED CONCRETE FOUNDATION.



This growing popularity of cement for the foundation and basement work of frame houses makes it exceedingly desirable for all carpenters to become familiar with the special problems of its use. The contracting-carpenter on a small job does not want to be obliged to call in a concrete specialist to show him how the foundations and cellar floor should be put in. It is not necessary. Also there are certain problems in connection with the joining of the wood construction onto the concrete that are worthy of attention.

There are two types of concrete foundation walls now accepted in general use. Both are illustrated in the accompanying working drawing. They are—first, the entire foundation wall of cement blocks and, second, the combination wall, poured concrete to grade and blocks or dressed stone above.

A wall of the first kind is shown to the left. Excavation for foundation of this kind is made in the usual way, deep enough to provide a footing below frost (3 to 5 feet down). It is well to make the footing twice the width of the wall and 10 inches thick. If the soil is firm, as it should be, no forms will be needed for this, the concrete being poured into the trench to harden. A special large size block is good for the wall, 8 by 12 by 24 inches. These are laid

Two Standard Forms of Construction for Concrete Foundations

frost; and the inside forms are set up. Concrete, composed of 1 part cement, $2\frac{1}{2}$ parts sand and 5 parts crushed stone or gravel, is then carefully shoveled in and tamped solid. This wall will be water-proof, dense, impervious to water, if, before the Portland cement was used, hydrated lime in the proportion of 1 to 10 was thoroughly mixed through it. When this foundation has hardened sufficiently, the upper wall of blocks or dressed stone is laid up in the regular way.

But no matter what kind of foundation walls are used, the floor of the up-to-date basement or cellar is of concrete. The construction is very similar to that for cement sidewalks. No sub-foundation is, however, necessary as a general thing. Level and pack the earth surface and lay down 5 inches of

concrete. Float smooth, giving all sections a slight slope toward some common drain point. When the concrete has become slightly hardened, apply a half inch top dressing of neat cement. This dressing should be rounded up in the corners and made continuous with the side wall finish.

To provide for cleaning water, or for any other moisture that might get in at any time, a tile drain leading outside the basement wall should be provided.

The drawing shows two methods of framing for the superstructure, one for an ordinary frame building, standard construction, and the other for a frame building veneered with four inch thick concrete blocks. These should be secured to frame work either with patent anchors or with large spikes driven into the wood with the heads built into the joints.

The Question of Sewage Disposal

HOW IT MAY BE SOLVED IN A SIMPLE, SANITARY AND CONVENIENT WAY BY VARIOUS MEANS WHERE THERE IS NO SEWER SYSTEM

By T. B. Kidner

A LETTER from Mr. F. R. Marrs, of Welford, N. D., brings up the very interesting and important subject of how to arrange for the disposal of house sewage in a safe and satisfactory manner. The letter, in part, is as follows:

I would like to get a little advice regarding a cesspool and sewerage system. I wish to erect a living house for my own use in a town where there is no sewerage or water system, and wish to have bath room and closet in basement. Would it be well to construct the closet low down, below floor, and arrange to burn the heavy matter frequently and allow the liquid matter to screen through the bottom of pit and run away to a cesspool? Ground is most all heavy clay. Could water from bath room be disposed of in same way by same pipes, or would separate pipes be necessary? What kind of material should be used for pipes and how far away from the building should cesspool be dug? I have 300 by 400 foot lot.

In case of closet as above would cement concrete be a good material to use for sides and bottom of pit, with cast iron top? If so, how should it be mixed and how thick should walls be?

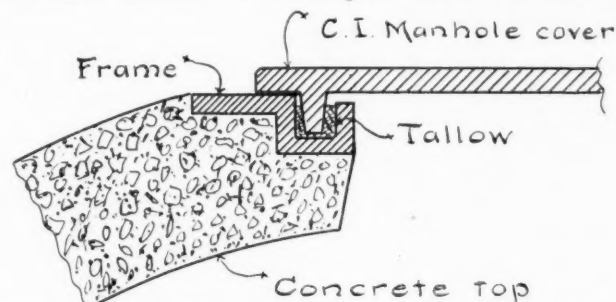
I have seen the above system in use for school house, and the refuse was burned out same as a furnace, every Saturday, and seemed to work all O. K. I want to heat with a furnace from basement, and could easily let chimney extend into earth far enough for this purpose.

This letter opens up a very large question, upon which some of the greatest of sanitarians have been engaged for years; the disposal of sewage in inland towns.

The first query as to whether the plan is feasible of allowing the liquid portion of the sewage to filter away, leaving the heavy matter to be disposed of by burning at intervals of a few days, must be answered in the negative. In the first place, it violates a cardinal principle in sanitation; namely, that all apparatus should be as nearly automatic in action as possible; the feature of requiring constant attention for the disposal of the heavy matter is a serious objection. Secondly, it would be an exceedingly difficult matter

to arrange the bottom of the pit so as to screen the matter effectively, and an impossible task to keep it from clogging and fouling in a very short time.

Two schemes are open in this case. One is to construct a large cesspool of cement concrete, or brick or stone work rendered inside and out with cement. This should be sunk in the ground as far from the house as possible and all waste from water closet, bath and sinks be conveyed to it in a drain composed of socketed terra cotta pipes, laid to a good fall (not less than one in forty) and carefully jointed in neat Portland cement. The cesspool should be arched



over and a large manhole, fitted with cast iron cover, provided in the crown. The cover should fit into a cast iron frame imbedded in the masonry or cement; the edges of the cover fitting in a groove filled with tallow, as in accompanying sketch.

A ventilating pipe of cast iron, provided with suitable hood, should be carried up from one corner of the cesspool some eight or ten feet above the surface. Water closet, bath and sinks should be connected to the terra cotta drain pipe with proper traps to prevent gases from the cesspool entering the house.

The size of the cesspool would depend upon the number of persons in the house, but it should be planned to hold not less than six months' sewage, if possible. An allowance of three cubic feet per person per day would probably be enough to cover water

closet, bath and kitchen slops. The walls of the cesspool would vary with its size, but for one of ten to twelve feet in diameter and ten feet deep, the bottom should be six inches thick and the sides ten inches at bottom, diminishing to six inches at the top. The body of the walls, if of concrete, may be in the proportion of 1:3:4; that is, one part cement to three of sharp sand and four of coarse gravel or broken stone, the whole to be rendered inside with a coat of one to one, cement and sand.

The foregoing plan assumes a supply of water from a tank in attic; or, better still, from a compression tank in the basement, such as has been described in a previous number of this journal.

The alternative to a simple cesspool scheme as outlined above, is to put oneself into the hands of some of the expert concerns dealing with the disposal of sewage in inland towns by one of the several excellent modern scientific methods now in vogue. The limits of space do not permit any lengthy description of these methods, but they may be roughly divided into "chemical" and "biological."

In the first, the sewage is rendered innocuous by the addition of some chemical substance. The liquid portion is run into a stream or open ditch drains, without any odor or nuisance, and any solid matter is placed upon the land as a useful and inodorous fertilizer.

In the second, advantage is taken of the well-known fact that Nature will purify any sewage matter poured on the earth by means of organisms or germs which attack the organic matter in the sewage. A system of one or more tanks partly filled with porous stones is provided, and the sewage is run through them. Whole colonies of germs are harbored in and around the stones and these attack the sewage, and in a very brief time purify it so that the liquid effluent and solid "sludge" remaining are odorless and harmless and thus easily disposed of. Many large towns in various parts of the world have adopted this system, which is known as the "septic tank" method of disposal. It is also in successful operation in thousands of private houses and may be applied to any premises, large or small.

Whatever plan is decided on, do not be persuaded to install any system involving frequent attention, and on no account put in any appliances requiring weekly burnings of sewage matter in the basement of your dwelling house. Such a plan would be a continual nuisance to carry out and most insanitary into the bargain.



Chicago Cement Show, Feb. 18-24

The coming Cement Show in Chicago promises to be a tremendous success. The date is February 18-24, and the place is the big Coliseum where the Republican National Convention of last summer was held.

At the time of going to press practically all of the

available exhibition space in the building has been contracted for. The Coliseum in February will undoubtedly present the greatest array of displays relating to cement, larger in number and more diversified in character than have ever before been gathered together under a single roof in the world. Arrangements have been carried out in a systematic, business-like fashion; every detail is receiving careful attention and all plans are rapidly nearing completion. The railroads have all made low rates; the show is being widely advertised on billboards, in windows, railway stations and daily papers throughout the country, and a competent staff of professional press agents are supplying live reading matter to the metropolitan press. A conservative estimate places the probable attendance at 50,000 people. Inquiries received at the headquarters of the Cement Products Exhibition Company presage a large attendance of visitors, not only from all quarters of the United States, but several delegations of cement men from foreign countries have signified their intention of coming to the exhibition to absorb the American ideas about the cement business and to study our methods of applying concrete.

The exhibitors themselves are making great efforts to prepare and install expensive and attractive displays; it is expected that the exhibits will be strikingly elaborate and more pretentious than those ordinarily seen at shows of a similar character. The uniform and harmonious scheme of installing and decorating the booths by the management has proven immensely popular among the exhibitors. It is confidently expected that the plan will meet with general approval at the show. The posts, railings, partitions, floor coverings, desks, tables, chairs, signs, etc., are all uniform and are provided by the management.

The show will be of incalculable benefit to the cement industry. Chicago is located centrally geographically and is readily accessible from all points. Thousands of architects and contractors in and around Chicago and within convenient traveling distance of it will visit the exhibition. The liberal support of the press tends to make the public much more favorable and responsive to concrete. To those who contemplate engaging in the concrete business the show offers a needed stimulus and a splendid opportunity.



One Way to Wax Cement Floors

In reply to a question as to a method of waxing a cement floor so that it can be danced on, the *Painters' Magazine* says that cement floors are, as a rule, too porous to be waxed successfully without being first filled. Though rather expensive, shellac varnish is most convenient and best adapted for preparing the floors in the shortest possible time. Two thin coats of orange or brown gum shellac dissolved in denatured alcohol will give the proper foundation for the wax, which should be ordinary floor wax applied with a cloth or brush and polished with a weighted floor brush in the usual manner.



THE HOME WORKSHOP

Ira S. Griffith

Is It Worth While?

THE VALUE OF "HAND-CRAFT" WORK, BOTH AS A RECREATION AND FROM THE POINT OF VIEW OF THE ARTICLES MADE—AN INTERESTING COMPARISON

THERE are times in the experience of every craftsman when he stops to take an inventory of his labors. At such times he is sometimes prone to wonder if, after all, his effort to do good honest work is worth while.

The writer has spent many hours of his spare time making pieces of furniture for his own home. Time and cost were of no moment. Thoroughness and honesty were all in all. Nothing was made that did not warrant painstaking effort, the designs being carefully considered beforehand so that disappointment would not follow.

Like many another craftsman, he would often stop a few moments after some exceedingly strenuous operation, such as the ripping of a 2 inch piece of good tough oak. During such intervals his mind has

often turned to the thought of whether what he was doing really paid.

Curiosity getting the better of his judgment, he took the trouble to keep tab on a piano bench he was making. This particular bench was especially well designed, both as to thoroughness of construction and ability to please the eye. The top stretchers were gained and grooved to give great rigidity and the lower one tenoned and keyed in the most conscientious manner.

Working conscientiously—and the writer knows well what that means, for he has worked for others, with others, and has had others work for him—he found it required twenty hours time for the woodwork and the putting on of a finish of stain filler and two coats of wax. Figuring this time at seventy-five cents, there



A Room Completely Furnished With Honest Home-workshop Furniture

was some machine work, the bench cost for labor fifteen dollars; material two dollars and sixteen cents. Upon pricing benches at the stores it was found that a bench could be procured for seven dollars.

At first thought this home work seemed an unwarranted extravagance. If a satisfactory bench could be bought for seven dollars why invest seventeen dollars and sixteen cents in one of one's own making?

A further inquiry revealed benches of similar appearance, both in size and construction as well as material, at prices ranging from fifteen to twenty dollars. This difference in price for similar design and mate-

to be a part; also, in places the gluing was faulty.

Other wonderful things had been done. Posts on Morris chairs that pretended to extend through the arms showed above the arms with the grain at right angles to the length of the post, *ad libitum*. In some of these imitations the work had been done so hastily that the imitations were not even "stuck" on in their proper positions. Tenons were placed too low for the stretcher, etc.

The higher priced pieces were not so—this then was the reason for the difference in price. Here was well illustrated the difference between the spirit of modern



Stout Hand-craft Furniture Especially Made for Hard Usage—Y. M. C. A., Oak Park, Ill.

rial caused a closer examination and comparison.

It is a common saying that in the large stores of the city one can find low prices in the basements and high prices for the very same thing on the upper floors. This may or may not be true, but here we found different prices for apparently the same thing on the same floor. The reason for this difference was made evident upon a close inspection.

For illustration, on one bench the grain of the wood on the keyed tenons revealed the fact that the tenons were no part of the stretcher of which they were supposed to be an extension. They had been made separately and had been tacked to the outside of the leg with small brads. So bunglingly had the imitation been made that the grain in it ran perpendicular to that of the piece of which it was supposed

commercialism and that of the old-time craftsman.

To the initiated such comparisons are not to the disadvantage of the hand-made pieces. Few people like imitations *per se*. They buy them only because they cannot afford to purchase the real article. It ought to be said, too, that no manufacturer makes snide furniture because he likes to. He would much rather make honest pieces, but he has listened to the call of the dollar, and so we have it.

Once in a while we run across a person whose moral perception is so dulled by commercial contact that he so far forgets himself as to try to apologize for such vicious construction. Once in a longer period we find a person who ought to know better doing the same. The writer not long ago picked up a text book written by a teacher for the instruction of high school

pupils in woodwork in which all of the drawing specified keyed tenons to be stuck on. His argument was that this method was stronger, there being no chance for the keys to split out the ends of the tenon. There may seem to be an element of truth in this assertion, but where tenons are made long enough to give proper purchase the objection is invalid. Granting his argument was true that the keyed tenon would not give the strength needed, the teaching of honesty at this susceptible age demands that the tenons be left off entirely rather than that they be stuck on in such a false manner. We do not grant his assertion, and his own furniture proves the insincerity of his argument, for on the plate racks in which this false construction is specified, there is comparatively no "pull" on the tenons at all. Such a use cannot be justified from the standpoint of decorative effect alone.

We would not be understood in this discussion as seeming to oppose machine made furniture. Such a course would be unwise. Machine made things have

come to stay and will, from the very nature of things, continue to monopolize the majority of the market. Let them be honestly made and as well as they can be—in some instances we admit they are superior.

Aside from the commercial aspect of this subject there is a more important element entering into the activities of the follower of the Home Workshop Department—it is the pleasure of doing things.

Every man should have some kind of interest other than that of his business if he would maintain proper balance in life. To many, an hour or two each day in the home work shop making some piece of desired furniture is the best kind of recreation. The body as well as the mind is quickened and the monotony of the daily routine is forgotten. If the interest is what it should be, when one is in the spirit, the pleasure of doing is capped at the close of the hour's work with a satisfaction that would make it seem worth while even if there was a monetary expenditure instead of the actual gain that there is in dollars and cents.

The Cost of Flooring

SOME INTERESTING FIGURES SHOWING THE COST PER SQUARE FOR LABOR AND MATERIALS OF YELLOW PINE AND OF OAK FINISHED FLOORING

By I. P. Hicks

IT MAY be of considerable interest to know the cost of some kinds of work per square, for example, the cost of a floor all complete in a residence of the average construction. Difference in construction and different materials would, of course, make different prices and a different result; but we will figure it in a way that, should anyone desire a change in the material, it would be comparatively easy to adjust the figures. This makes the consideration in this way of much value in estimating the framing and finishing of floors. By a careful use of the figures here given it is possible to make them serve the estimator for various combinations.

We will take a square (100 square feet) of a floor figured with 6 by 8 inch sills and 2 by 8 inch joists, 16 inches on centers.

	Material	Labor
Framing lumber, 135 feet at \$25.....	\$ 3.37	\$1.00
Rough floor, laid diagonal, 120 feet at \$25	3.00	.85
Yellow pine finish floor, 4 inch, 125 feet at \$38	4.75	1.80
Smoothing up, labor		1.75
Nails50	
Paper between rough and finished floors..	.25	.10
Totals	\$11.87	\$5.50
Total material and labor.....		\$17.37

Thus we see that the cost for material per square is \$11.87, and for labor \$5.50, making a total of \$17.37 per square for material and labor. For convenience in estimating one may take the price at \$17, \$17.50 or even \$18 per square, as they see fit.

It will be noticed that 120 feet is figured in the rough floor to cover 100 square feet. The rough floor may be of 8 inch shiplap; and in such case one-fifth is added to make up for the loss by the milling and waste in cutting. With the finish floor one-fourth is added for the matching and waste in cutting.

The question might arise now how much should be added to the above figures if the finish floor should be a 2¼ face oak floor, smoothed by scraping. The result is as follows:

	Material	Labor
135 feet 7/8 by 2¼ face oak flooring at \$80	\$10.80	\$3.00
Smoothing up, labor.....		2.75

Total

Now the cost of the pine floor was \$4.75, making a difference of \$6.05 a square in the cost of the flooring. The cost of laying and smoothing the pine floor was \$3.55, making a difference of \$2.20 in the labor. This makes the total difference for material and labor \$8.25 per square, the amount necessary to add for oak floors well finished up. This is equal to about 47 per cent more than the total cost of the square of the pine floor and would bring the total cost of a square of oak floor up to \$25.62.

The above figures are perhaps a little high, and it would probably be safe to figure at \$25, even, for the square, or about 40 per cent more for the finished oak floor than for the pine. None of the above figures include the filling and varnishing.



Talk good roofing; not how cheap you can put it on.

PRACTICAL CARPENTRY

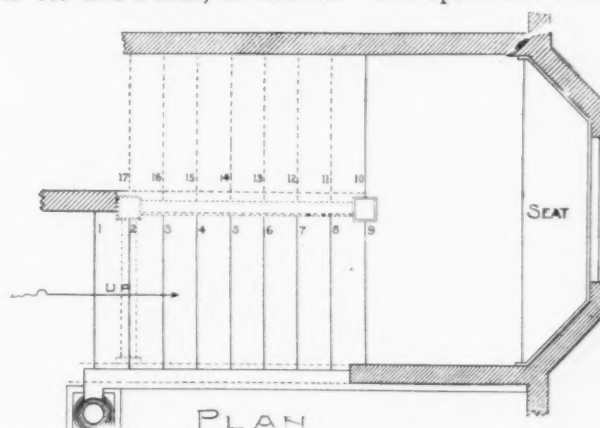
Notes on Stair Building

THE IMPORTANCE OF STUDY AND CARE IN THE DESIGNING AND PLACING OF RESIDENCE STAIRWAYS—A SATISFACTORY ARRANGEMENT SHOWN

ENTERING the reception hall, one of the first things to catch the eye of the visitor is the stairway; and an impression of the whole interior is at once formed, either for the beautiful or the commonplace finishings of the house. If the stair is spacious and well proportioned in architectural detail and easy of ascent, possible short comings in other things will be overlooked. On the other hand, if the stair is poorly designed and placed, an opinion is at once formed as to the whole house; no matter how richly the trimmings of the apartments may be, a bad impression of the whole interior is formed. All this is because of a lack of foresight in allowing a proper space for the stairs; due allowance should have been made in the framing and laying out of the rooms. In other words, plan the stairs first and arrange the other work, such as for the halls, etc., to it for comfort and convenience.

There are many ways of building stairs; what may be suitable in one place, may not be in another. Whatever style is wanted, however, should be carefully

nor a boxed stairway. It is planned to lead from the reception hall adjacent to the library. It is built of quartered oak; the high paneling next the library side gives it the appearance of a semi-privateness, while the top of the paneled wall has a wide shelf on which to set bric-a-brac, if desired. The space from floor



to floor is 10 feet 3 inches, and, as there are 17 risers, it leaves $7 \frac{4}{17}$ inches for the individual rise. The platform coming at the ninth rise is 5 feet $5 \frac{2}{17}$ inches from the main floor. This platform is just what it signifies—a resting place. It has a wide cushioned seat with high back extending up to an art glass window, making the whole a light and cheery place.

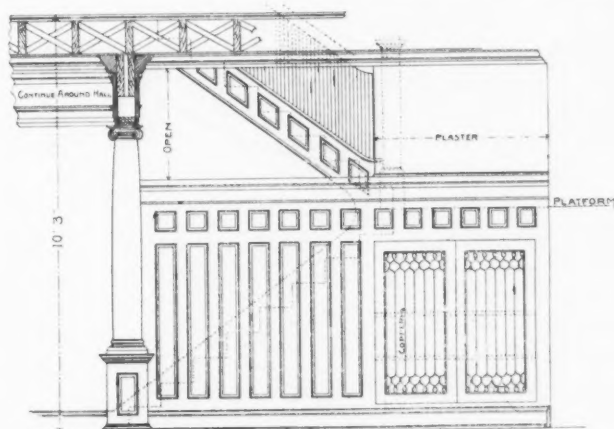
The space under the platform is not lost, for on the library side a commodious book case is arranged with art glass doors, while on the other side drawers are made to fill the space; these open into a closet adjacent to the dining room.



Sand, Lime and Sawdust

The following is a method for rendering wood factory buildings more fire-resisting. The method consists in filling the spaces between the studding with a grout made of sand, lime and a large proportion of sawdust. Mixed with sufficient water to flow slowly, it becomes quite hard, is a poor conductor of heat and will not ignite, although it is charred by intense fire.

This applies to a building already constructed, where it would be a difficult task to remove the sheathing, or lath and plaster already on the inside walls.



ELEVATION.

laid out, so that no part will be stuffy or crowded. Plan for plenty of headroom; it looks better; besides it is needed when taking furniture up and down. The extra space there will be a hundred times more valuable than what little would be added to the room above.

The accompanying illustration shows a very pretty arrangement for a residence. It is neither an open

A Grip for Anything Round

A SIMPLE AND EFFICIENT DEVICE, SOMETHING THAT IS OFTEN NEEDED—WHAT IT CAN BE USED FOR AND HOW IT IS MADE

PROBABLY few, except machine operators who have used wood pulleys, realize the power of the grip that may be had on anything round by simply clamping it between two pieces of wood, *properly fitted*. One who is unaccustomed to wood pulleys is almost invariably surprised, on seeing them in use, to learn that they are held from turning on the shaft only by the friction of the smooth wood on the smooth metal. Realizing the efficiency of such a grip, one may make use of it for many purposes other than holding pulleys in place.

For turning a pipe, or holding it for any purpose, a wooden clamp may very acceptably take the place of a pipe wrench or vise which is unavailable. For turning or holding a pipe whereon the marks of a wrench would be objectionable, nothing is better.

If one has an expansive bit, as most workmen have, it is but a few minutes' job to make such a device; and it may be held, if for temporary use only, by a pair of cabinet maker's clamps, in lieu of bolts. Too much stress, however, cannot be put on the necessity of a good fit, as having the hole a trifle too large, even though enough wood is removed from the adjacent edges of the pieces so that the sides of the hole bear, makes the thing comparatively worthless.

The hole being just a snug fit, just sufficient wood should be cut away, between the two halves, so that

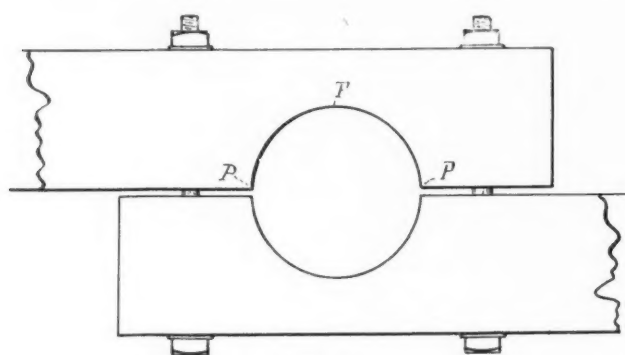


Fig. 1

they will not come together when the bolts are drawn up. Also, the pieces should not be made so large but that they will yield a trifle when the full pressure of the bolts is on them. The reason for this can be best shown by reference to the accompanying diagram, Fig. 1.

Though the direct draft of the bolts is considerable, yet when the wood yields a trifle, bending over the point F as a fulcrum, a still greater pressure, due to the leverage, is brought on the end grain of the wood at the points P, P. While the friction, with a given pressure, is the same, regardless of the area of the surface of contact, we must have wood enough in contact so that it will not tear away. The wood at P, the torsional strain being in the direction of the grain,

will rend very easily; and, once started, will roll up and form a veritable roller bearing.

By making the hole a close fit, and allowing for a little spring as stated, we not only get the benefit of the strength of the whole surface of wood, but place the greatest strain where the wood is strongest, i. e., at the points P, P. It will readily be seen that one need have as much care not to cut out too much wood, from between the pieces, as to cut out enough. The proper amount, of course, depends on the texture of

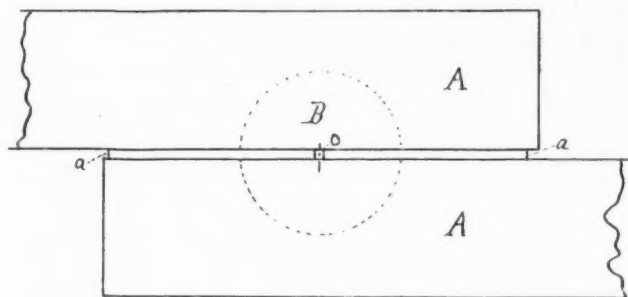


Fig. 2

the wood used, the size of the hole and numerous other conditions the significance of which can be measured only "on the job."

How to Make

A word as to the best way of making such a grip may not be out of place. First, it is desirable that the two parts should be bolted together before the hole is bored. It is sometimes more convenient, in case the job is small, to bore a hole in one piece and then split it; in which case the bolt holes as well should be bored before the splitting, in order to insure that accurate fit and absence of indirect strains which is essential to the best results. In case of larger work, and in all cases where accuracy is of moment, it is better to make the clamp in two pieces from the start. In nine cases out of ten it is just as easy, and far better.

The two pieces, A, A, Fig. 2, should first be laid together, marked for the center of the hole, O, and for the bolt holes. The best distance apart to place the bolts is another matter that depends so much on the immediate conditions that it cannot be stated at random; but it should be such as to utilize the full strength of the wood. Having marked for the holes, take a piece of wood, a, a, 1/16 inch to 1/8 inch thick, as wide as the thickness of the pieces A, A (a piece of heavy cardboard will often do), and long enough to reach between, and a little beyond, the bolts. Square this across the middle, and cut it in two. Put the pieces between A, A, with the squared ends on either side of the center mark, O, about 1/16 inch apart. Clamp the whole together, bore the bolt holes, put in and tighten the bolts, and remove the clamp.

It is best to have set your expansive bit, and to have

made sure that it is right by boring a test hole in a waste scrap. This having been done, bore the hole B. It will be found that the worm of the bit will follow the opening at the center, and that the result will be a hole more accurately square with the work than could be otherwise bored. Removing the pieces a, a,

will usually leave ample space between the parts; if not, more can be planed off.

The selection of hard wood for this purpose is not as essential as one would be apt to think; and the holding power of a piece of soft pine, accurately fitted, will usually surprise one who has not tried it.

The Construction of Chimney Stacks

PROPER SIZE OF FLUES AND THICKNESS OF WALLS—RELATION OF STACK TO ROOF—BEST BOND IN BRICK CHIMNEYS FOR STRENGTH

AFTER the walls of the building have been built up to the wallheads, the next consideration is the erection of the chimney stacks, which may be of various forms of construction. Those chimney stacks of an irregular plan can be bonded in a better manner than those of a common form, and have often been found to be much stronger. When carried up smooth and almost straight, without any bending or contortion in any part, a flue 8 by 8 inches may be considered sufficient for a stove or any ordinary hot air furnace, and ample for an open fireplace of medium size. Still there is danger of some obstruction occurring, so that it is advisable to adopt 8 by 12-inch flues, where it is at all practicable.

Movements and Strains

The settling of chimneys is of great importance. It is nearly certain that there will be an unequal movement between the chimney and the house. When the chimney is built upon a ledge or some immovable foundation, the roof will be sure to settle a little because of the natural shrinkage of the wood construction. On the other hand, more frequently the chimney, because of its isolated foundation, and the general shrinkage of the mortar joints, will be found to have settled more than the roof. By reason of this, as well as the danger from fire, there should be no direct attachment of any part of the roof timber. Chimneys should be, and usually are, built entirely free, and are secured to the frame by strap-iron ties, which can be so made as to bend freely to adjust themselves to any settlement, either of the chimney or of the frame.

In those cases of outside chimneys, where protection from the weather is necessary, this natural movement between the chimney and the house must be taken account of, and the chimney should be constructed with a projection of brick in line with the frame, so that the boarding may extend over and break the joint. If the top of a chimney stands clear above the house for more than ten or twelve feet, it should be stayed to the roof with iron rods. Two rods should be used, and placed as far apart as possible at the point of junction with the roof, to give a certain amount of lateral support to the chimney.

Lead for counter flashing is sometimes supplied for the mason to build into the joints of the chimney above the roof boarding. Precautions should be taken to see that the pieces are of good size, and that they are properly cemented into the brick or stonework. They

should be at least six inches above the roof, and should be turned down over the flashings, which the carpenter will build in with the shingles.

Chimney Caps and Tops

The stone caps for the tops of the chimneys should be carefully measured on the ground, to ascertain that they are the proper size, and that the holes for flues are large enough, and of the exact size, and in the right place. If the chimneys are large and have thick walls, it is necessary to make the stone cap in pieces. When this is done the stone should be properly bound together with galvanized or composition clamps.

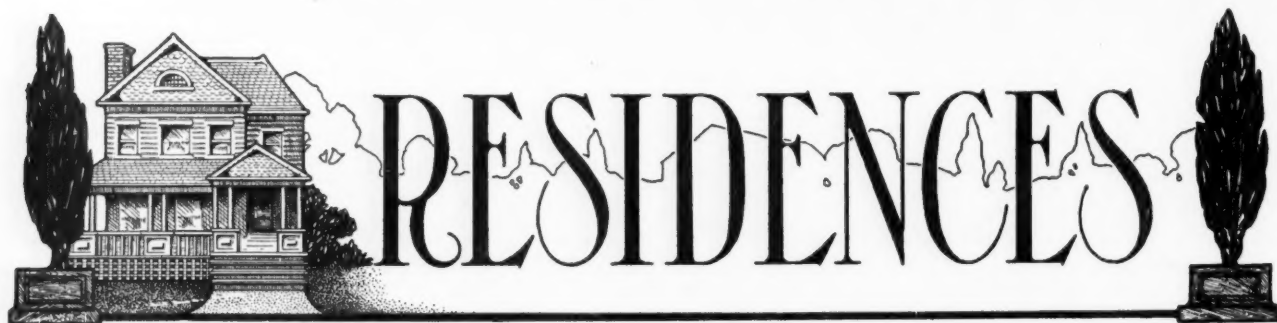
One thing that should be avoided is the excessive projection of bricks to form the chimney top, and no more than one-half to three-quarters of an inch to each course should be allowed. It is advisable that the projection from the shaft of the chimney should be protected on top by a weathering of Portland cement; where an outside chimney is reduced in size, the weatherings should be of stone.

Although it is preferable in brick chimney stacks to have the outside work 9 inches thick, in order to keep out both the rain and the cold, which may affect the draft, yet more frequently the outside work is only 4½ inches thick.

Bonding Chimney Stacks

In the bonding of chimney stacks, the desired end to be kept in view is that the withes between the flues shall be tied in, so as to strengthen what otherwise might prove a very weak construction. When the flues are surrounded with 9-inch brick-work, either English or Flemish bond may be adopted. The great difficulty occurs with 4½-inch work; up to the present a broken kind of bond, termed "chimney bond," in which the withes are indifferently tied, has been adopted. In this bond a whole stretcher is used upon the quoin. Now by sacrificing the small amount of extra strength obtained from the use of the stretcher upon the quoin, and substituting a three-quarter bat instead, the work may be built either in English or Flemish, and an excellent tie and bond be secured.

According to some strict building regulations, the chimney shaft or smoke flue must be carried up to a height of not less than 3 feet above the roof, flat or gutter, adjoining thereto. This measurement is made from the highest point in the line of junction with such roof; also the highest six courses of every chimney stack or shaft must be built in cement.



Desirable Homes for City and Suburb

PHOTOS WITH FLOOR PLANS OF A MODERN CITY APARTMENT, A VILLAGE HOUSE OF THE PROSPEROUS CONSERVATIVE TYPE, AND A WESTERN BUNGALOW

A TYPE of residence that is coming to be very popular in the cities, and also somewhat in the smaller suburban towns, especially in the east, is the two-story, two-flat building. Very often they are designed so that on the outside the appearance is just the same as that of an ordinary dwelling, being placed in the center of a good-sized lot, having

lighting. The front exposure is used to its fullest extent for window space, and furnishes a good source of light to the front rooms. Also, the kitchen and dining room are easily lighted from the rear. This leaves still two or three rooms "inside"—usually bedrooms. The building regulations of most cities provide that no windows can be built on a lot line. A



An Attractive Two-Flat Building—Cement Plaster Lined with Red Brick

open spaces with lawn all around, and being finished architecturally on all four sides. More frequently, however, where the land is so expensive as to preclude this treatment, they are built into a solid terrace. When properly designed they make a very satisfactory dwelling built in this way.

The important problem, of course, in the design of any terrace residence is the proper and sufficient

system of courts between the adjacent buildings is therefore formed, providing for light and ventilation quite nicely.

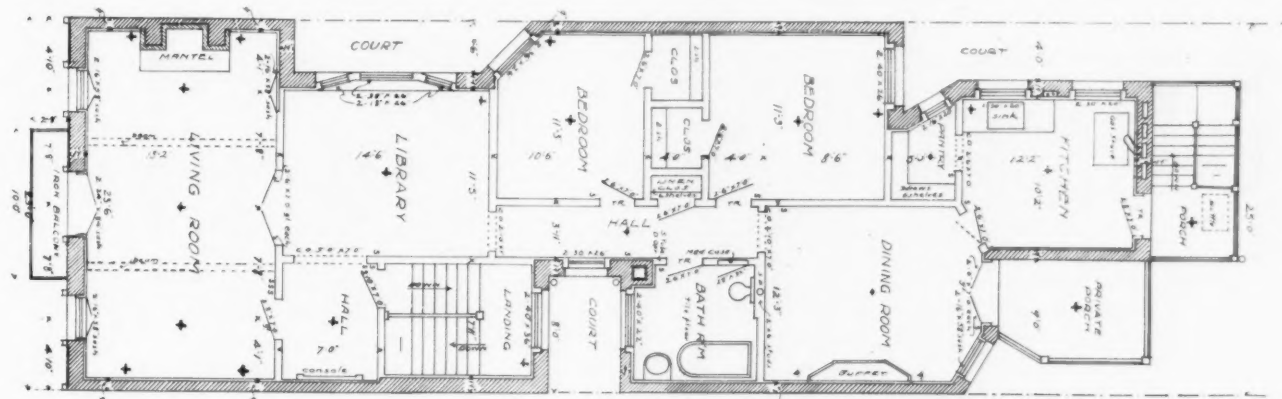
The accompanying plans illustrate these points very well indeed. They show a flat designed for a 25 foot lot, two stories with basement, each apartment containing six finely arranged rooms with bath. The disposition of floor space and the provision for light

and air seem to be especially good.

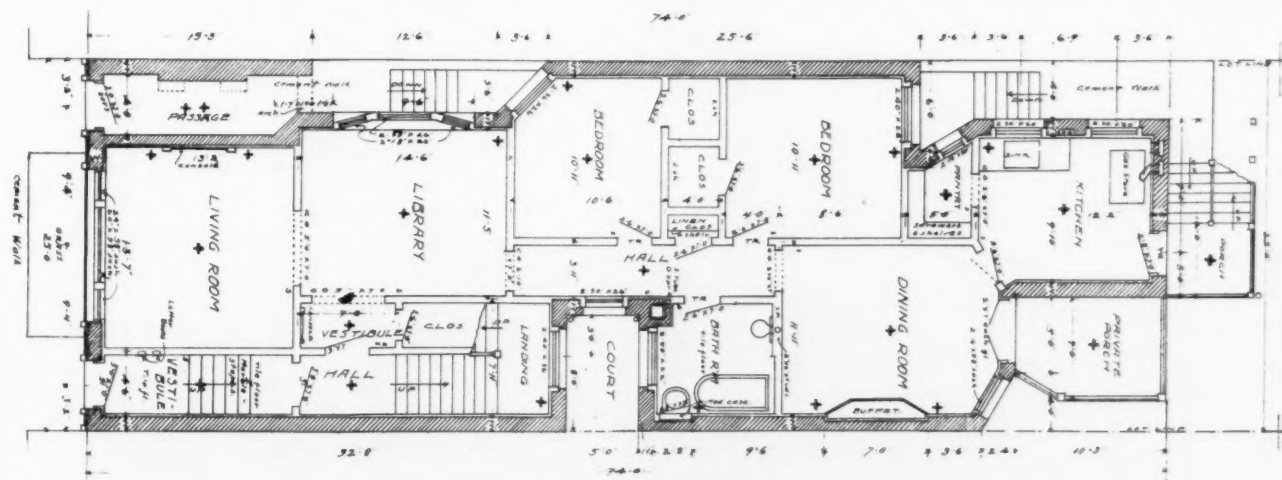
The exterior treatment of this building is an attractive combination of brick, stone and cement. The main portion of the wall is plastered with the natural

tions of city designing, it is really refreshing and instructive occasionally to study what might be called the prosperous, conservative, village type of house.

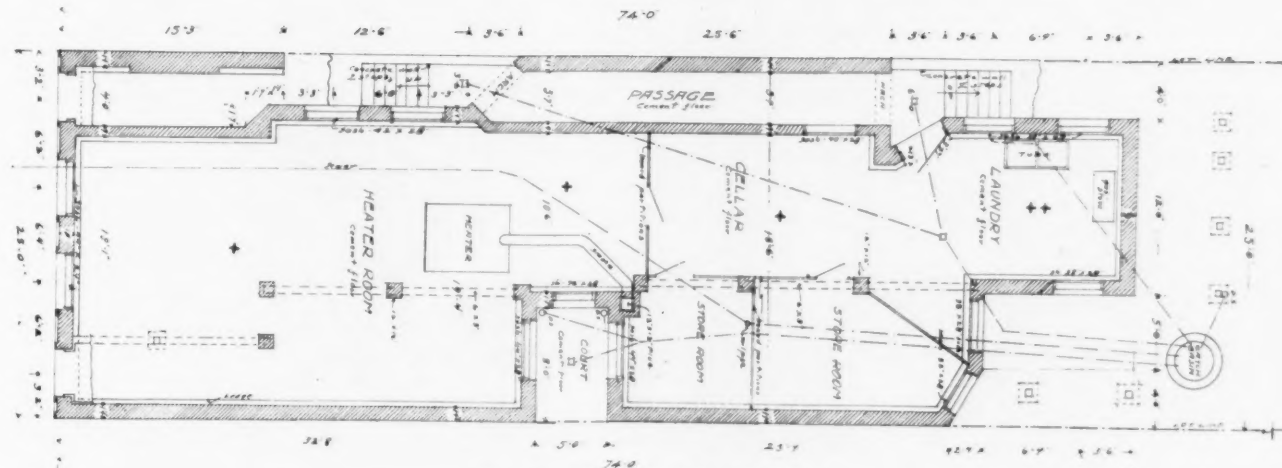
Such a house is shown in connection with this, the



Second Floor Plan



First Floor Plan



Basement Plan—Two Flat Building

gray rough-cast cement. The trimming courses are of red brick, and stone ornaments are used.

A Comfortable Village Home

To the architect and designer of houses who has been for some time under the tyrannical sway of the modern idea and has felt the requirements and ex-

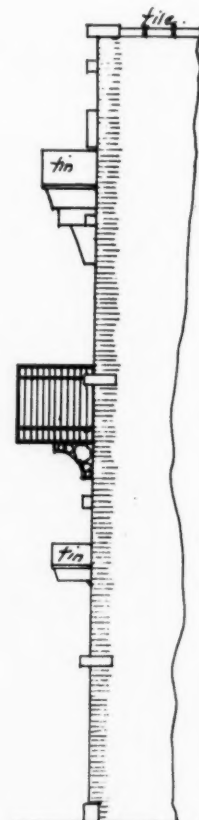
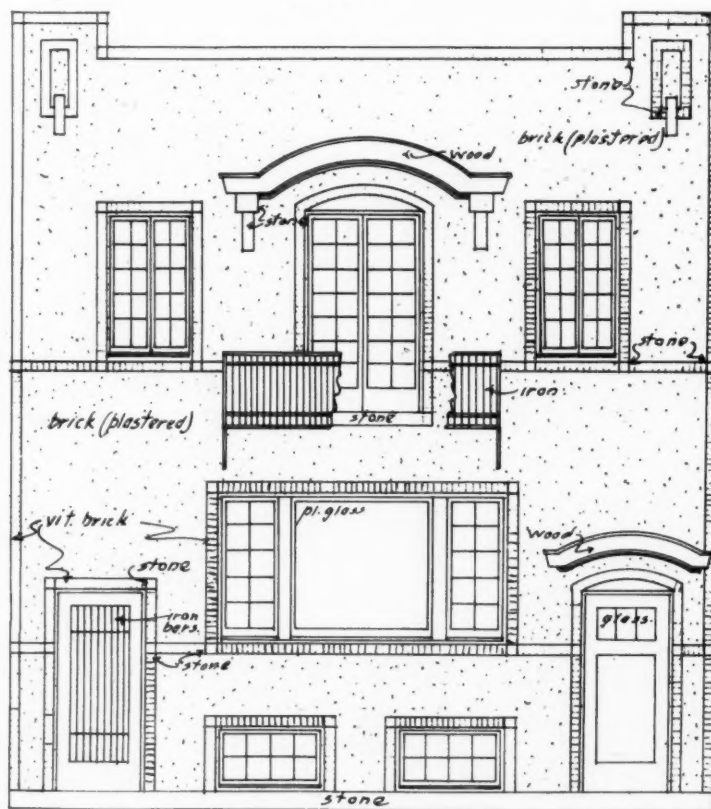
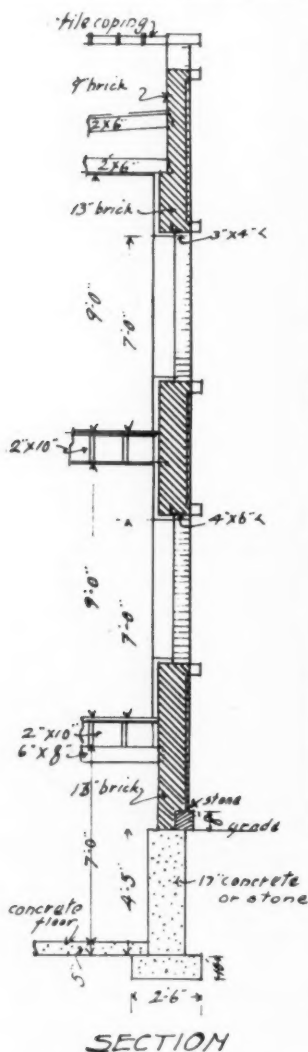
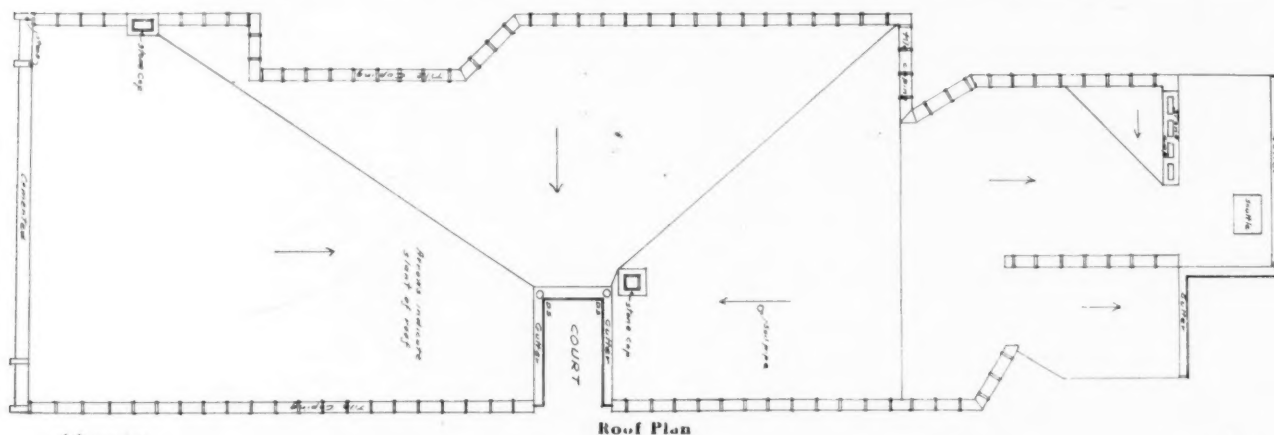
residence of Mr. W. E. Pinkham, at Lincoln, Me. When we consider its generous roominess, its light, high-ceilinged rooms and its general air of home-like comfort, we feel inclined to modify somewhat a few of the extreme notions now current regarding house planning. A study of the floor plans on page 525 will show the many interesting features of this house.

A Western Bungalow

The question "What is a bungalow?" has been asked very many times during the past year; and the answers have been numerous and varied. Some have held it to be a broad and straggly house, all on one floor; others that it is a rustic house, mostly verandas; the latest characterization is that it is the "Merry Widow" style in architecture. All of these are mani-

and difficult one for even the authorities to answer. "Why is a bungalow?" on the other hand, is extremely easy. Because it is cosy, convenient, new. Because it looks like three thousand dollars while costing two. It looks like begging the question to say that the bungalow is popular because the women like it;—but that's the truth!

A good example of a house designed and built in



FRONT ELEVATION

SIDE

the approved bungalow style is given herewith. It is the new residence of Mr. T. A. Hollister, at Omaha, Neb. The exterior is inviting and the interior is very satisfactorily arranged. A glance at the floor plans on page 526 will reveal many desirable features.

Volcanic Ash and Cement

A Japanese company is promoting the use of vol-

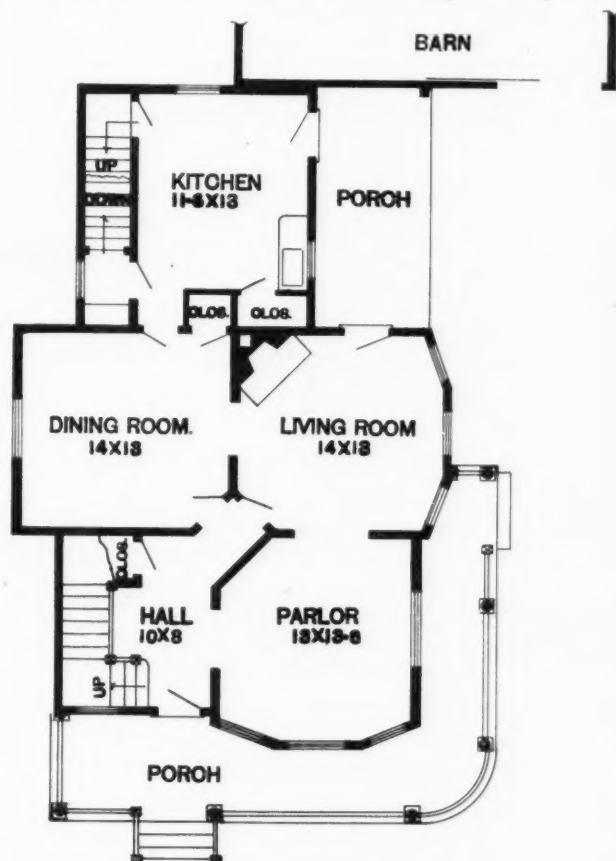
festly inadequate, not covering the case. The truth is that, although we all know a bungalow when we see it—at least that it is done in the bungalow style—the question—"What is a Bungalow?" is a hard

canic ash in combination with Portland cement, especially for construction work in salt water. The advantages claimed for this volcanic ash are that in combination with Portland cement it gives a greater

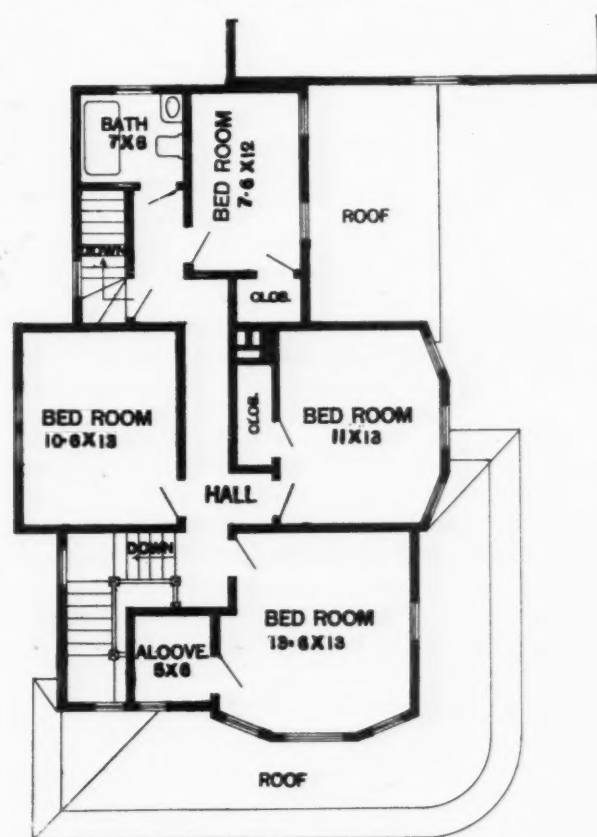
water reservoirs and reinforced concrete for the protection of iron from oxidation.



A dangerous \$5 bill is in circulation; it's No.



First Floor Plan—Mr. Pinkham's House



Second Floor Plan—Mr. Pinkham's House

tensile strength than cement alone. It is also claimed that the mortar is denser than cement mortar, and does not permit the percolation of water. This density gives it a superior quality for construction of

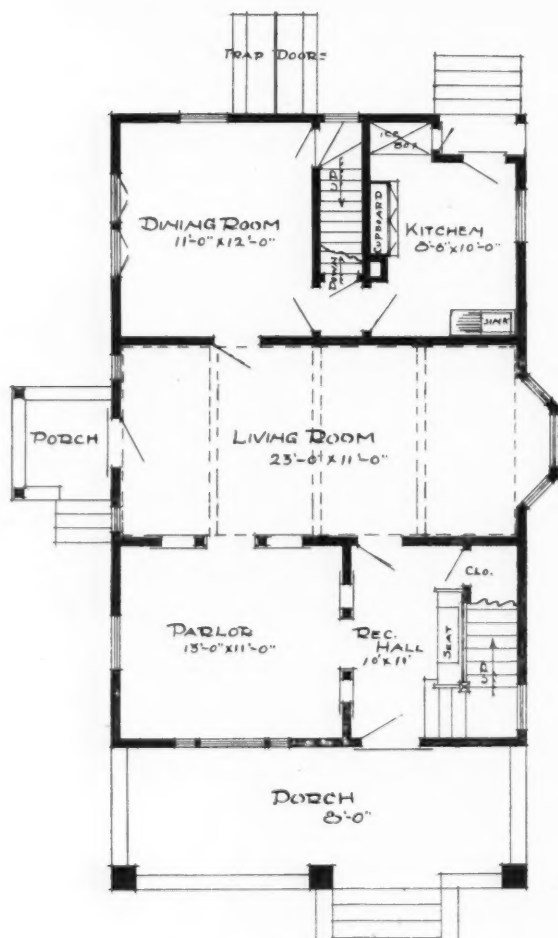
D47963782, says the *Chattanooga Times*. We do not know what the danger is, for the average man would have to turn it loose again before he could finish comparing the figures.



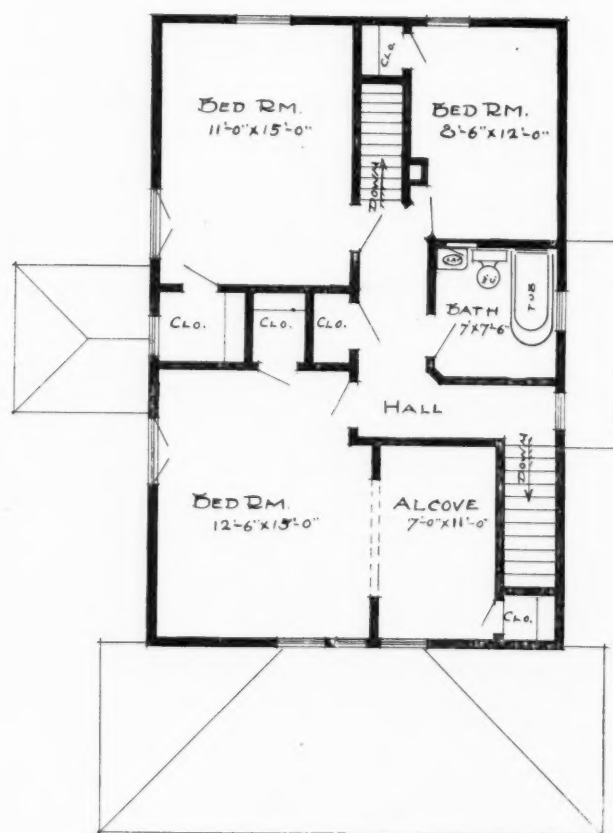
The Attractive and Comfortable Home of Mr. W. E. Pinkham, Lincoln, Me.



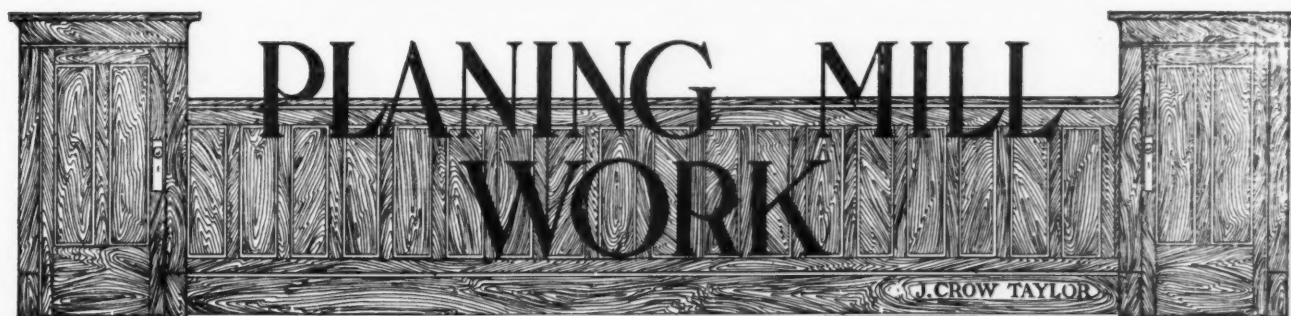
A Western Bungalow—The Residence of Mr. T. A. Hollister, Omaha, Nebr., B. F. Miller, Architect



Bungalow Type—First Floor Plan



Bungalow Type—Second Floor Plan



Setting Planer Knives

CLEAR AND SIMPLE DIRECTIONS FOR DOING THIS IMPORTANT WORK—HOW MISTAKES ARE OFTEN MADE—THE SUBJECT DISCUSSED

A CORRESPONDENT makes a special request for instructions in detail as to how one should go about setting the knives on an ordinary twelve inch jointer or top smoother.

Setting the knives on a jointer or top smoother is in some respects one of the simplest jobs of planer knife setting. Yet, simple as it appears, there are chances to get considerably tangled up and confused unless one thoroughly understands it and starts off on the right basis.

There are some who make but little fuss over setting jointer knives. They take a rule and measure from the knife edge to the lip of the cutter head, and give whatever extension they think is about right, varying all the way from one-sixteenth to one-eighth of an inch extension of the knife beyond the cutter head lip. They set both ends of both knives to the same measurement on the rule, tighten the bolts; let it run for a minute; then stop to tighten down again; and, after whetting the wire-edge, let it go. There are some men who seemingly can do a very good job of it this way, too; but it is not the right way for several reasons.

Different Types of Machines

The first thing to consider is the type of your machine and the nature of its two sections of table or bed plate. Some machines have the back section stationary and the front section adjustable for different depths of cut. Others have both the front and back adjustable. Some have an independent adjustment on each edge; but on the majority of them both edges of the table are adjusted alike. In other words, your knife must be set so that its cutting edge is on a level with the table, across its width. Then where the back section of the bed or table is stationary the knives must be set on the cutter head so as to extend just enough to clear a straight edge resting on the back section of the bed. It must clear it the same at each edge and in the middle. In fact, the table then becomes the regulator of the extension of the knife and frequently the knives should be adjusted by using a straight edge or stick lying flat on the back half of the table or bed and extending over; the cut-

ter head should be adjusted so that it just clears it smoothly.

Adjustment in Detail

Taking the specific case inquired about of an ordinary twelve inch jointer, and going into detail, let us assume that it is a two-knife cutter head. Now, if you intend to set your knives to what is considered the right extension beyond the lip of the cutter head, and then adjust your table to them, about the simplest and easiest way is to make a caliper gauge that will reach from the back of the cutter head across the front just enough in advance of the lip to allow the extension desired. You may take any caliper rule for this, but it is best to make a permanent gauge or buy one. Any planing mill machine or supply concern furnishes such gauges, or you can take an old piece of saw blade, or any thin steel and cut out one. Then by using it carefully on both ends of each knife and on each knife alike, if your cutter head is true, you can feel pretty safe that both knives will cut alike and that they will be on the head properly, no one extending further than the other.

Just how far to let the knife extend depends somewhat on the work you are doing. Some run the edge of the knife pretty close to the lip, especially where they want to do smooth work. It is in this about the same as setting a hand plane with the cap down over it. The lip of the cutter head takes the place of the cap; and the closer it is the smoother the work. It is not best for doing rough work and taking deep cuts. For this you need a knife extending more freely. Generally it is found best to compromise between the two extremes and let the knife extend from one-sixteenth and one-eighth of an inch beyond the lip of the cutter head. It depends a little on the design of the cutter head as well as on the work you are expected to do; and it is well to experiment a little until you decide which is best.

After you have decided what extension you want, then you should carefully adjust your back table or bed plate to the knife by using a straight edge on top of it. Where the bed plate itself is not readily adjustable you may find it necessary at times to shim

under the journal boxes supporting the cutter head. It is advisable to avoid as much of this as you can; but there are certain conditions under which it is not only justified, but necessary. For example, when the bed will not adjust except both edges at the same time and you find that in order to make the knives clip evenly with a straight edge lying on the table it is necessary to have them extend further from the lip at one end than from the other; in other words, to make the knife at one end of the cutter head describe a larger circle than the other, it were much better to shim under the box on that end so that the axis of the cutter head will be in line with the bed and the extension of the knife be the same at both ends. These are the things one is likely to get tangled up, if he does not start right in setting the knives on the top smoother. Sometimes the bed will get out of line with the cutter head itself. And if a man sets his knives by using a straight edge on the back half of the bed and extending over the knives exclusively it may give him a cutter head running an uneven diameter; or if he does the other thing, sets the knives regardless of the bed, he may find the jointer cuts on one part of its surface and not on the other. Or it will cut more on one edge of a board than on the other when it is jointing, making it difficult to do square work.

It is well enough to take pains and spend plenty of time, at first, in getting all these matters straightened out, and getting what you consider the right extension of the knife beyond the cutter head, and getting the cutter head and knife both adjusted to the back half of the bed. Remember, it is the back half of the bed you do the adjusting to, because the front part moves up and down to regulate the depth of the cut. The back part is simply the rest which supports the timber after it passes the knife and the rest must be on a true level with the plane of cutting.

After getting the knives set just right it is then time to make this permanent caliper gauge, instead of having just an adjustable one.

Then to set the knives is only a few minutes' job and you know that they are right; if any difficulty arises in the operation of the machine you can look for the trouble in the adjustment of the bed or in the journals of the cutter head. By having a permanent gauge of this kind and keeping it handy, it is an encouragement to the more frequent grinding of jointer knives, a thing that is needed in most institutions, because you can take them off and grind them, and it is only a few moments' job to put them back by this gauge, just whet the wire edge off and go ahead.

A jointer kept in proper order is one of the best and most convenient machines about the shop or mill. It can be used for taking the wind out of twisted sticks, for squaring pieces that are not perfectly square, for jointing properly, and a multitude of other things. But with all these, to get satisfactory work it is very important that the knives are properly adjusted and in their true relation to the back half of the table or bed. If they extend too far above it so that they cut a shaving off of a stick that is resting on the back table it will not make a true joint; and if the knives are too low the timber will keep climbing up on the back table.

The front half of the bed is always adjustable, and sometimes you will make mistakes in this and adjust the front end too much or the lower end too much, or get one edge too low or the other too high; but the adjustment of the front half of the bed has nothing to do with the setting of the knives. They are regulated by the back half and it is to keep this regulation as near perfect as possible with the least trouble that it is advised to have a permanent gauge for setting.

Veneers for Wall Paper

THE ASTONISHING USES BEING MADE OF THE HARD WOODS IN MODERN INTERIOR DECORATION—ADVANTAGES AND POSSIBILITIES IN THE USE OF VENEERS

AMERICAN architects and interior decorators have made some astonishing uses of hardwoods for house decoration in the last year or two, and the tendency to increase the wood fittings in modern houses is a development that must have important bearings upon millmen, cabinet workers and wood-carvers. The prevailing fashion is due not only to the general belief that wood is more hygienic than paper or upholstered fabric, but to the superior artistic effects that can be obtained with this material. The cheaper class of houses may continue to use plaster, wall-paper and kalsomine, but the better homes are adopting wood more and more for general interior finish.

One of the latest achievements in this line is veneered walls and ceilings. This was first attempted as an experiment, but it has proved so successful that

many imitations of the original effort have been made. A prominent architect in finishing off the dining-room of a Fifth avenue house in New York undertook to carry out the idea of finishing off the walls and ceilings with veneers. The walls were first built of wide planks carefully joined to produce a smooth surface. All knotholes and joints were then filled in so that the surface was perfectly smooth and air-tight.

Then over this surface was laid a veneer of hardwood one-sixteenth of an inch thick. Another veneer with the grain running in the opposite direction was placed over the first. Altogether four veneers were put on the walls in wide strips. The finishing veneer was laid in simple conventional patterns. Mahogany, Pacific Coast fir and Asiatic sycamore were the veneers used for the finish. The graining of the wood was carefully matched so that when finished and polished

a most exquisite appearance was obtained. There were no joints visible in this surface; nothing but a plain wall as perfect in appearance as the handsomest parquetry floor.

The Scent of the Forest

The exposed beams and ceiling were treated with veneers in the same way, and finally a handsome hardwood floor was laid. The dining-room was thus totally enclosed in a rich wood setting. The wainscoting was of darker wood, and the panels above of lighter woods finished in simple but effective patterns. There was no mortar, plaster, wall-paper or kalsomine in the room. Nothing but wood. And how the scent of the fresh aromatic wood filled the whole place! It was like spending a day in the woods to eat a meal in that dining-room.

This substitution of wood veneers for wall-paper and fabrics has been carried farther in the finishing off of sleeping chambers with aromatic woods of hygienic value. It is well known that the balsams, firs, cedars, and other similar woods emit an odor that is conducive to sleep and is very soothing to the nerves. Now, a room enclosed by wood veneers carries the odor of fresh wood for years, and the ideal hygienic bedroom can thus be constructed.

From an artistic point of view the veneers are more valuable than the highest priced wall-papers or tapestry. The effects obtainable in veneers, with a dull or bright finish, are almost infinite. They may run from the very simplest patterns to the most elaborate. Then, too, our domestic and imported hardwoods furnish the decorator with an endless variety of colors and grainings.

Veneers for Universal Use

Not all of us can afford to have our homes finished off in veneers of rosewood, mahogany, teak, Italian walnut or French burl, but most of us can find great satisfaction in interiors of oak veneers or of curly birch, maple, ash or other domestic woods. The interior finish of summer homes or of those located in warm climates with domestic hardwoods has been common for years, and the effect is pleasing to the eye and of hygienic value; but this kind of work is far different from the artistic work of veneering the walls. The wide or narrow strips of hardwood of the summer house furnish a pretty interior finish when polished, but they do not keep out the cold and wind sufficiently for general use in cold winters of the North. Some efforts have been made to line the walls back of the hardwood strips with tar paper, plaster boards and similar substances for keeping out the cold, or even filling in the space between the walls with broken bricks, but in spite of these improvements the hardwood interior finish for winter houses outside of a few of our Southern states has not become very popular.

The application of the veneers to the interior finish, however, promises a decided change in this respect.

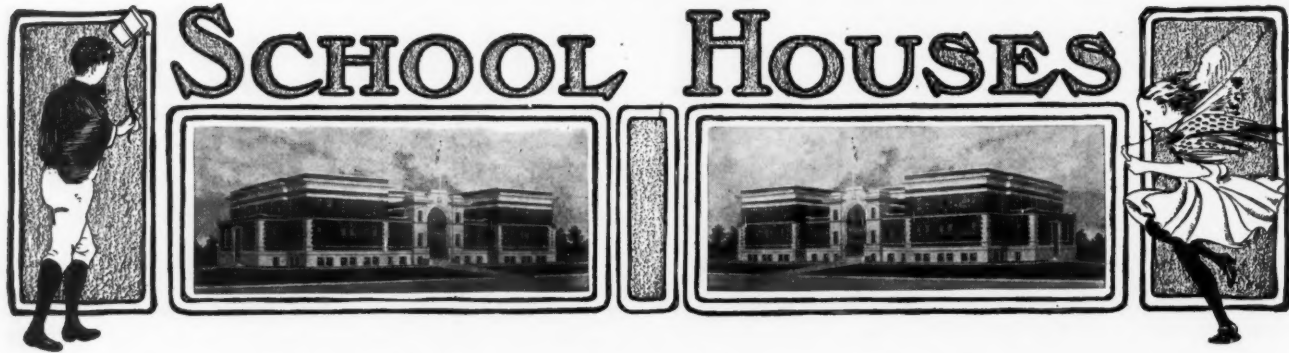
For smoking-rooms, lounging dens, dining-rooms, and even for bedchambers the veneered walls offer beautiful contrasts and artistic effects. The cost of such an interior finish is nearly double that of ordinary plaster covered with fine wall-paper, but if the walls are covered with tapestry the hardwood veneers are not more expensive. Of course much depends upon the design of the wood used. Some of our imported woods, costing a good deal, such as Italian walnut, French burl, Persian walnut, teak, satinwood, and white mahogany, would naturally make the expense suitable to the pocketbooks of only the most wealthy.

This method of interior decoration of the walls and ceilings is in harmony with the revival or rather the improvement in hardwood floors. More than ever hardwood floors are being put into the houses of the wealthy. In the past year a number of New York's best houses have had floors of hardwood constructed that cost as high as \$4,000 and \$5,000. New designs and patterns, and new woods, are employed for this work. The designs are both elaborate and simple. Any of them are imitation of past periods in floors. Thus the old English wide planking is quite popular, and also the various French styles. A very fashionable feature of this is to have period rooms constructed, the floors representing the changing French patterns of decoration fully as much as the furniture and pictures. One thus passes from an early French period into one of later date, and so on through half a dozen periods.

Fashionable Woods

The Italian walnut is one of the most fashionable woods for this purpose, and also one of the most expensive. Teak wood is also used today a good deal for fine parquetry work. The importation of some of the best Philippine hardwoods in the last few years has stimulated a demand for them for interior decoration. For instance, the Philippine kiri is a wood that takes a beautiful polish and grain effect. It has been used extensively by the cabinet-maker and the makers of parquetry floors. There is a beautiful graining effect obtained with this wood that gives almost an Oriental appearance to a floor or wainscoting. The Asiatic sycamore is another wood that is receiving popular attention.

It is quite apparent that hardwoods will be employed more and more in the veneer form for nearly all kinds of interior decoration. The successful use of them in furniture and cabinet work has been followed by ordinary interior trim, such as doors, window sills, panels and wainscoting, but now that the walls and ceilings are being covered with the veneers we will have the highest development of wood fittings. In many respects a plain veneered wall is handsomer than an excessively heavy finish with costly wood carving. In this case the dependence upon the grain and natural beauty of the wood for the artistic effects makes the veneers more simple and natural than the carving.



A Modern Eight-Room School

PERSPECTIVE AND FLOOR PLANS OF A CONVENIENT CITY SCHOOL BUILDING MODERN IN CONSTRUCTION AND DISTINCTIVE IN DESIGN

THE design we are presenting this month is one of exceptional vigor and strength of treatment. It is extremely simple and direct in its general outline and arrangement—which is one of the chief requisites in public school architecture—and possesses moreover a distinctive quality far above the ordinary. It is the work of Geo. W. Ashby, architect.

ventilation has been provided for. The stairs, corridors and coat rooms are arranged to reduce crowding and confusion to a minimum.

The basement is of such a nature that it can be finished off at any time, either the whole or in part, for use as laboratories, work shops or recreation rooms. Floor plans are given on the next page.



The plan is very nearly square; high basement course of Bedford stone; walls of yellow brick, trimmed with buff terra cotta ornaments; slate roof, hipped, and with wide extending eaves. The main entrance is marked by a four foot projection of the building, extending above the eaves and finished with a rounding parapet.

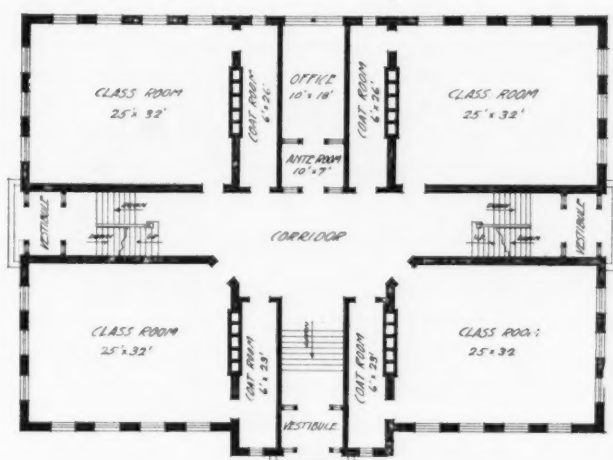
The arrangement of the rooms is one that can not be improved upon for an eight room city school building. There are four rooms 25 by 32 feet in size on each floor. Every room is well lighted and good

Improved Revolving Door

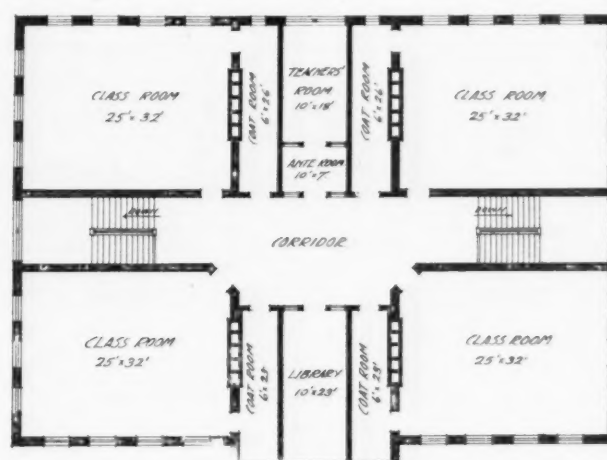
The very latest thing in revolving storm door installation is an electrically operated device which is always in motion, making about six revolution per minute and having a capacity of 4,320 persons in each direction per hour. This door is operated by a motor of one-quarter horsepower and has a number of advantages over those which are moved by the persons passing through. It prevents congestion and accident and is a great convenience to women and others who happen to have their hands filled with

bundles. It is possible for a woman with a number of packages or a small baby coach to pass through without the least trouble or delay and without using

wings is so arranged that when the wings are rotated, if any one wing comes in contact with a person or catches a person between the edge



Eight-Room School Building—First Floor Plan



Eight-Room School Building—Second Floor Plan

her hands in any way whatever for this purpose. The compartments of this door are much larger than those usually encountered and there is room in the center for a large showcase. Each of the six revolving

of the wing and the circular wall, the wing will flex back out of the way, or slide past the person obstructing it. Each wing is also arranged so that in case of a panic people can pass out at each side of the center.

Slate as a Roofing Material

THE VARIOUS KINDS OF SLATE AND THEIR SPECIAL USES—HOW THE ROOF SHOULD BE FRAMED AND THE SLATE LAID FOR BEST RESULTS

THE use of slate for roofing purposes is something neither new nor experimental. It, in fact, out-dates everything except thatch, undressed timber, roughly baked clay and stone. In Wales, France, England and Germany, where quarries have been opened and operated for hundreds of years, there are many buildings, dating back at least 200 years whose slate roofs are apparently as good as when first laid.

The American slate deposits have been mined more or less extensively for nearly one hundred years. In quality, the American stock is conceded to be fully up to the foreign standard, although the colors and textures differ slightly. Slate, in limited quantities, is found in a number of states—Alabama, Arkansas, California, Maine, Maryland, Michigan, Minnesota, Virginia and Georgia, but the chief supply has been, and to a greater extent in the future, will be drawn from the great slate producing states—Vermont and Pennsylvania.

Kinds of Slate

One of the best known grades of slate in the United States is the Sea Green, exclusively produced in Vermont. This slate is of a light green color and the stock is exceedingly strong and tough. For medium priced dwellings, barns, mills, factories, warehouses—in fact, for any roof where durability is the first consideration and color is of minor importance, roofers can recommend Sea Green slate as an ideal roofing material and of almost unlimited durability. Some quarries produce smoother stock than others, but any

grade will make a good roof when properly made and selected.

Purple Vein slate is produced in western Virginia. It is a strong, handsome stock, with a rich purple color of good wearing qualities. The Purple Vein slate make a very attractive and satisfactory roof, and this grade is rapidly coming into favor with architects and owners.

For public buildings, colleges, school houses and the better class of dwellings, there is no better slate in the United States, or none having a greater use than the Bangor, which is mined from the Bangor group of quarries, Northampton county, Pa. Most of these are old, deep quarries and their product consists of a usually well made slate of great strength and durability and handsome black color.

The No. 1 Bangor is a clear stock. The No. 1 Bangor Ribbon comes from the same vein and is exactly similar in every respect except that it has one or more "ribbons" or dark streaks running across one end of each slate, and these are always covered when laid on the roof. (When the "ribbon" is cut off it leaves No. 1 Bangor stock.)

A very large amount of black slate is produced in Pennsylvania and sold either under the name "No. 1 Pennsylvania Black," or else is given a special trade mark or name, which frequently changes. The quality of all of the slate just mentioned varies greatly—depending entirely upon from what vein—from what quarry and even from what quarry bed the slate came.

In western Vermont, Unfading Green slate is mined

in a very limited way. This slate has a durable light green color and the stock is strong. The Unfading Green is much more expensive than Sea Green, on account of its limited production and better color.

Red slate is mined exclusively in eastern New York and is the most costly slate in the United States, because of its extremely limited and varying production. The color and stock are good and substantial. The color ranges from light to dark red, depending upon from what quarry and, in most cases, from what quarry bed same comes.

The Peach Bottom slate is mined in southeastern Pennsylvania and northern Maryland, and the Maine slate, from the state of that name.

They are both excellent slate, of handsome black color and of great strength, but the limited output and the unusually heavy cost of production, make both very costly.

The slate production of Alabama, Arkansas, California, Michigan, Minnesota, Georgia and Virginia is of so limited a nature that same is not and can not be considered as a factor in respect to supply.

Avoid Cheap Slate

It frequently happens that beginners in the roofing business, through inexperience, are induced to use low priced slate, which generally means *inferior stock*. Roofers sometimes make the same mistake because some contract was taken very low or through a desire to procure an extra profit on their work. The fact should constantly be borne in mind that while the use of such inferior stock may yield a high profit for the time being, yet the results in the end, will be to ruin their business. Prospective customers are greatly influenced by the appearance and durability of the roofs already laid in their vicinity, and if these roofs do not show that durability, etc., which can reasonably be expected, they lose faith and confidence in slate and some other form of roofing material will be used. From a personal observation of years, the writer knows of many cities and towns in which the slate roofing business is now stagnated and the use of slate almost discontinued, simply because a large amount of cheap and worthless slate was laid in said towns, with the above mentioned results.

Strength of Building for Slate

It is the prevailing opinion of people not familiar with the use of slate for roofing purposes, that a building should be constructed very much stronger for slate than for other roofing materials. This is a great mistake, as any building strong enough for shingles, tin or iron is strong enough for slate, for the following reasons: The weak points of any roof are the valleys or other breaks in the roof where snow drifts in and lodges, and when the snow melts with rain the weight at points where the snow has drifted is much heavier than any two slate roofs. It is well known that snow will not stick on a slate roof as it

will on shingles or on a metal roof, as the slate being of a warmer nature causes the snow to melt and slide off; while with shingles or metal it freezes on, causing greater weight than a slate roof is ever called on to bear. Two by six rafters, eighteen feet long, two feet from centers, gives a roof all the strength necessary for a slate roof. The writer has seen hundreds of houses roofed with slate where the rafters were two by four, two feet from centers, sixteen feet long, with collar beam nailed across one-third of the way down from the top.

Pitch of Roofs

Slate can be depended upon to make a roof perfectly water tight on any pitch down to one-fifth. Half pitch or steeper makes the best roof both for looks and strength, as it throws the weight on the walls more than on the rafters, and causes the snow to slide off clean, thereby never overloading any one part of the roof.

Sheathing Boards

Matched lumber is best for sheathing for any roof, but surfaced boards from six inches to ten inches wide make a good job and are used on a large majority of the buildings now being put up. Sheathing boards, when not matched, should be nailed at both edges on rafters, which should not be over two feet apart. Wide boards when used for sheathing are liable to warp and curl up at the edge, thus affecting the slate. While it may not break the slate it raises the courses, marring the appearance of the roof. Very often a roof that lies well and smooth when done, apparently gets rough and the slates stick up. The roofer is often **blamed for this when the cause is really in the sheathing**. Great care should be used in putting on the sheathing that there are no lumps or uneven thicknesses in the boards, as they will surely show after the slate is put on. This especially applies on curved roofs or round towers, dormers, etc. In all such, the rafters should be close together and the sheathing perfectly solid and smooth. Where the sheathing is not solid it is almost impossible to make a good smooth job, for the reason that in driving one nail it jars the next slate loose. Lath or strips are often used instead of sheathing boards on which to lay slate, but in such case the lath should be at least one and one-quarter by two and one-half inches, and must be spaced to suit the size of slate used. They should be placed so that the upper end of each slate will rest in the center of the lath. This plan is a good one for barn roofs, as it allows some ventilation between the slate; but where a perfectly snow-tight roof is wanted, the slate should be pointed with hair mortar on the underside of the slate at the upper end of each course, also the joints between the slate. Tarred or other water-proofed paper should be used under slate where the same is laid on sheathing boards. This will insure a roof perfectly tight against fine snow.



PAINTING

Edward Hurst Brown

Modern Wood Staining

SOME SUGGESTIONS FOR PRODUCING THE NOVEL EFFECTS IN HARD AND SOFT WOOD FINISHING, NOW SO POPULAR

A FEW years ago the art of wood staining, so far as it had been developed, consisted entirely of crude attempts at imitating the more expensive woods by coloring the cheaper lumber with a thin wash of pigment mixed with oil or ground in varnish. These stains were made by the leading paint manufacturers, and were sold, as they still are, under such names as mahogany, oak, walnut or cherry oil stains, or varnish stains, as the case might be. The oil stains are intended for the use of the practical painter, while the varnish stains are made for the amateur tinkerer, and serve both as a color and as a first coat of varnish.

When used on white pine or whitewood, these stains will produce a more or less close resemblance to the color of the wood which it is desired to imitate, but the great dissimilarity in the grain markings of these woods from those of the hardwoods which they were supposed to represent, renders these stains comparatively useless except for a cheap class of work. The fact that the hardwoods could be stained to take on an additional beauty did not seem to occur to wood finishers until a very few years ago, but when the idea was once introduced, it immediately caught the popular fancy; and now decorators do not hesitate to color oak, chestnut or other hardwoods to harmonize with the decorative scheme of the room, even though the colors employed may be entirely different from those found in any natural wood.

Aniline Ready-to-Use Stains

The possibilities of this class of wood staining have been very greatly increased by the developments in the manufacture of aniline dyes. Only a few years ago, colors of this class were too fugitive to stand exposure to strong light for any length of time, and hence had little value for any purpose requiring the permanence looked for in wood finishing. But the investigations of chemists have produced aniline stains that are really almost light-proof and which are capable of producing very beautiful effects on the various hard-

woods. Moreover, a class of aniline dyes soluble in linseed oil has been produced, which has made it possible for the color and varnish manufacturers to place upon the market ready-for-use stains that produce many novel and beautiful color effects, and which are entirely free from the muddiness inseparable from a pigment stain. It is true, the latter are more permanent, for absolute fastness to light does not seem to have been actually obtained in aniline colors as yet, in spite of the claims sometimes put forth concerning them. Nevertheless they are sufficiently permanent for all practical purposes; and at the end of several years, if they begin to fade appreciably, it is possible to replace them with an entirely new color scheme.

So many beautiful stains of this character are on the market that it is scarcely worth while for the hardwood finisher to go to the trouble and expense of preparing them for himself, when the ready-to-use article will answer his purposes exactly, and will cost him little if any more than he would pay for the materials required to make his own stain.

Spirit Stains

Aniline oil stains have one disadvantage, in that they darken, because of the darkening of linseed oil when not exposed to strong light. The decorator who wishes to produce clear bright color tones will use alcohol or water stains, even though these raise the grain of the wood, necessitating subsequent sandpapering to remove the projecting fibres and a second application of the stain to cover the bare spots left by the sandpapering. An alcohol or spirit stain will penetrate deeply into the grain of the wood, acting as a dye rather than as a surface coating; and it possesses the advantage for hurried work that it dries very quickly and may be followed almost at once by a coat of shellac.

The writer has seen work that has been stained and had two coats of shellac in the same day, and in the case of repairs to stores, offices and other places where business must not be delayed, this is a valuable con-

sideration. For ordinary work, the shellac is usually used for a first coater after the stain, and the subsequent finishing coats are built up with light colored varnish.

Soft woods, such as white pine, white wood, cypress and some other similar woods, are too spongy to use water or spirit stains upon them, for the wood will immediately suck up the stain and it will be almost impossible to avoid showing laps at each application of the brush. Oil stains are the only ones that can be applied to woods of this character. Some finishers give them a thin coat of shellac before staining, which will permit either a dye or a pigment stain to lie in a thin film on the surface. While this gives a uniform color, it is not staining the wood in the true sense of that term.

Colored Varnishes

A class of finish, entirely distinct from the old varnish stains, has been introduced within the past few years. They have been extensively advertised and have met with a large popular demand. These are made by coloring a quick drying varnish with aniline oil stains. They enable one to color and varnish a surface at the same time, thus meeting the wants of the amateur tinkerer. They are more particularly adapted for small articles, such as chairs and other pieces of furniture, or small brackets and the like. On floors they should be applied quickly along the entire length of one board. Then the next board should be coated, and so on. The reason for this is that they dry so quickly that the workman needs to be very careful in using them or he will show laps. For this reason painters find it difficult to employ them on architectural woodwork, where broad surfaces, such as door panels, wainscots and the like must be covered.

These colored varnishes are sold under different trade names, but are practically identical in composition, no matter what they are called or by whom made.

Chemical Stains

Many very beautiful effects are obtained on oak, mahogany and other woods containing tannic acid, by means of chemicals of an acid or alkaline nature. These chemicals, however, produce little or no effect on dry, pitchy or sappy wood. In other words, while they may be employed to change the color of the hardwoods, they cannot be used on pine or white wood in order to make these cheaper woods imitate the more expensive ones. These chemical stains are permanent in their effect, and as they actually change the chemical nature of the wood itself, they produce clear color tones, without any of the muddiness left by pigments. They have no tendency to become lighter or fade out under exposure to the strongest light. Chemical stains are ordinarily employed by the furniture factories to produce the effects known as weathered and fumed oak, and similar changes that, as a rule, might be classed as darkening of the wood, although some of the chemicals produce an actual change of color. They are also employed by expert hardwood finishers in the highest

class of architectural work, but although in theory they are very simple, they require such careful manipulation to produce the exact tone desired, that they should be handled only by experts.

The simplest of all these stains is ammonia, which may be used to darken oak or mahogany. It should be reduced with water to the desired strength and applied with a mop or fiber brush, as it will destroy hair or bristles. In this, as in all other chemical stains, it is safer to make the ammonia more dilute than necessary, and to apply successive coatings, rather than to attempt to use the full strength. As the ammonia completely evaporates, leaving no residue behind, it will not affect subsequent coats of varnish.

Another way of using ammonia is the so-called fuming process, by which effects can be produced that cannot be obtained in any other manner. It is applicable, however, only to small articles which can be enclosed in an air-tight box, on the floor of which are placed shallow porcelain or glass saucers containing 26° ammonia. The fumes rising from this produce a very even stain without raising the grain of the wood, thus avoiding any necessity for sandpapering. This process will take twelve hours or more, according to the depth of tone desired. The fuming process is difficult to use for the standing finish of a room, as it is next to impossible to close up the windows and doors so tightly as to avoid the escape of the ammonia fumes, and the quantity of ammonia required to fill a room so that it will act on the wood is so great as to be dangerous to the health of people in the house, in the event of leakage.

Reliable Formulas

Lime water, made by slaking ordinary lime in sufficient water, is probably the oldest of the chemical stains, having long been employed by hardwood finishers for darkening mahogany. It is brushed over the surface and allowed to remain until it is thoroughly dry, when the powdered lime is well brushed off, and the wood is then thoroughly washed. A coat of vinegar must then be given to neutralize any alkali remaining in the wood, and which would be injurious to subsequent varnish coats.

Caustic soda and caustic potash will also produce dark stains, but are difficult to handle, and are seldom used on account of their liability to injure the after finish.

Chromate and bichromate of potash as well as permanganate of potash are used to produce the so-called golden oak, and also give an antique effect to mahogany.

A yellow effect is given to walnut by the use of picric acid, which is also employed to liven up the tone of this wood.

Where expense is no object, a very beautiful brown tone can be obtained by the use of iodine.

About one-half pound green copperas dissolved in a gallon of warm water can be employed to advantage for the purpose of deepening and fixing the color of

any of the above stains. Vinegar is used to neutralize alkali stains before varnishing.

Verdigris, dissolved in soft water or vinegar, will give a green stain on almost all woods.

Sulphuric acid diluted with equal parts of water will give the so-called Sixteenth Century effect on oak.

Bichromite of potash dissolved in water will give to walnut an effect resembling rosewood.

A strong solution of nitrate of silver applied to any wood and exposed to sunlight will give a metallic black stain.

As many of the chemical stains mentioned above are active poisons, extreme care must be used in handling them, and as a rule it is well for the workman to protect his hands with rubber gloves.

Staining Yellow Pine

We have been asked by a subscriber for a method of preparing stains to make yellow pine look like antique oak, mahogany and rosewood. As we have already explained, it is impossible to make one wood look like another if the character of the grain differs materially. The grain of yellow pine is so strongly marked and is so characteristic that no matter how closely we may make the yellow pine imitate antique oak, mahogany or rosewood in color, we can never hope to make it look like any of them. A number of varnish and paint manufacturers make stains with which a great many beautiful effects can be obtained on yellow pine, and unless our correspondent is an expert hardwood finisher, we would advise him to buy the prepared stain and use it strictly in accordance with the directions given by the manufacturer, rather than to attempt to make his own stains. We will, however, give him formulas for making the stains desired.

An antique oak stain is made by dissolving 12 ounces of soluble Vandyke brown in a gallon of water, to which is added a pint of ammonia of a strength of 16° or 18°. This is heated, and after it is removed from the stove, a half pint of turpentine is added to prevent raising the grain of the wood.

The simplest method of producing a mahogany stain is by boiling two ounces of soluble Bismarck brown in one gallon of water until the brown has dissolved. Strain, after it has cooled. Before using, warm it and add one-half pint ammonia and one-fourth pint turpentine.

For rosewood the above stain should be mixed with about half its volume of walnut stain, which is prepared by dissolving two pounds of soluble Vandyke brown in a gallon of water, by boiling, and adding, while hot, one gill of ammonia and one gill of turpentine. It should be used while warm.

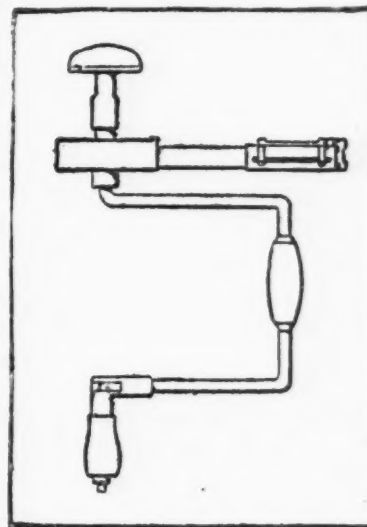
Many of the odd and beautiful effects produced by the furniture manufacturers are obtained by the use of colored fillers. In other words, the paste filler which is necessarily used in filling up the pores of any open grained wood, is mixed with enough pig-

ment color finely ground in oil to produce the effect desired. In some cases it is merely required to accent the grain, while in other cases a contrasting color may be employed. In any case where an open grained wood has been stained, the filler should be tinted to match.

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Brace With Level

A novel arrangement of a level on a carpenter's brace has been designed by a Brooklyn man. In operating a brace and bit the carpenter has no means of ascertaining whether the hole he is boring is exactly at right angles to the wood or not. He must depend upon his practised eye. Naturally the hole must be drilled correctly. In the brace shown in the illustration a spirit, or other level, is attached close to the handle. The carpenter is thus able to tell at a glance whether or no the



Level Attached to Brace

brace is exactly in the proper position. Where the screws are to be set in the wood at an angle other than at right angle, the position of the brace can be determined by reference to the level. This attachment should prove of value to cabinet makers in whose work screws, etc., must be placed accurately.

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A Serious Matter

The mountainous waves threatened to engulf the struggling ship at any moment. The captain ordered a box of sky-rockets and flares brought to the rail, and with his own hands ignited them, in the hope that they would make known his distress to some passing ship.

Amid the rockets' red glare a tall, thin, austere individual made his way to the rail and reproved the captain as follows:

"Captain, I must protest against this unseemly bravado. We are now facing death. This is no time for a celebration."

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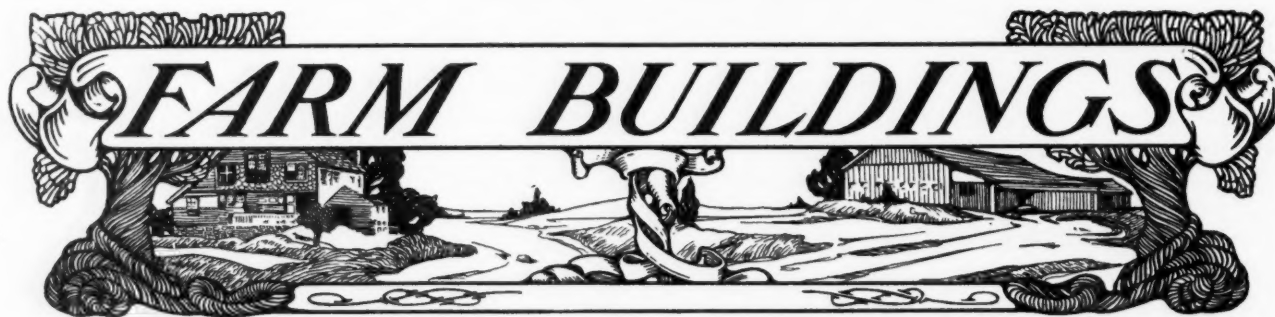
Very Difficult

"I am to be vaccinated," she said. "It mustn't show, you know."

"And where," we inquired, "do you intend to have it done?"

"Ah, that's the question!"

So saying, the Salome dancer shook her head sorrowfully, almost despairingly.



The Farm House and Its Design

IMPORTANT SPECIAL FEATURES TO BE CONSIDERED IN THE PLANNING OF A FARM RESIDENCE—A SATISFACTORY DESIGN PRESENTED

THE special problems of farmhouse planning have, in general, been given but little thought. This is unfortunate, for there is no class of structure in which utility and convenience count for more. As a rule, however, these factors seem to have been given but little consideration when the farmer's home was planned. Most seem to have just grown up, either planned while being built or not planned at all. If a house is convenient it is more than likely to be

room should open directly onto the hall and there should be a bath. This last, however, is usually a serious problem in cold climates, not so much on account of the difficulties of obtaining water supply and waste facilities as from the danger of freezing. If the house contains a heating plant, this problem is of course solved at once.

Ceilings should be kept as low as possible, 9 feet being a reasonable height. Rooms with low ceilings



A Farm House of Satisfactory Arrangement and Design

satisfactory in other respects; the essentials of convenience are directness and simplicity.

A farmhouse should have a kitchen and dining room of ample size, and good pantry space, all arranged to save steps and close to fuel supply. One living room is enough for most farmer's needs, the parlor and reception hall usually being considered useless. Stairs should be convenient to both living room and kitchen, and it is seldom that two stairways are necessary. They should be closed in, unless the house contains furnace or steam heat. Every bed

are more easily heated than those with high, and can be made much more homelike, and comfortable. A typical house, with a convenient and compact floor plan and simple but substantial exterior is shown herewith, an ideal home for the man on the farm. A study of the floor plans which show well the arrangement of the rooms and the disposition of the various features will prove interesting and instructive.



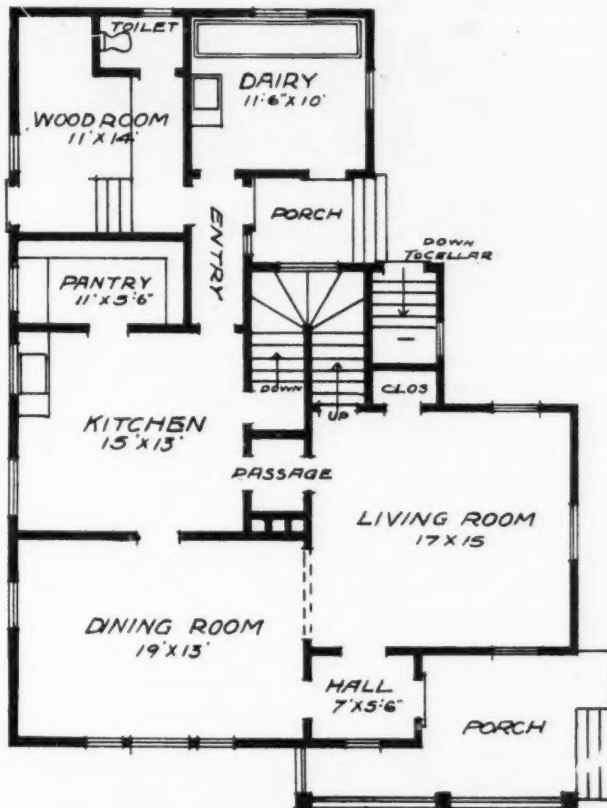
Pointers on Estimating

This is an age of science. Estimating has become

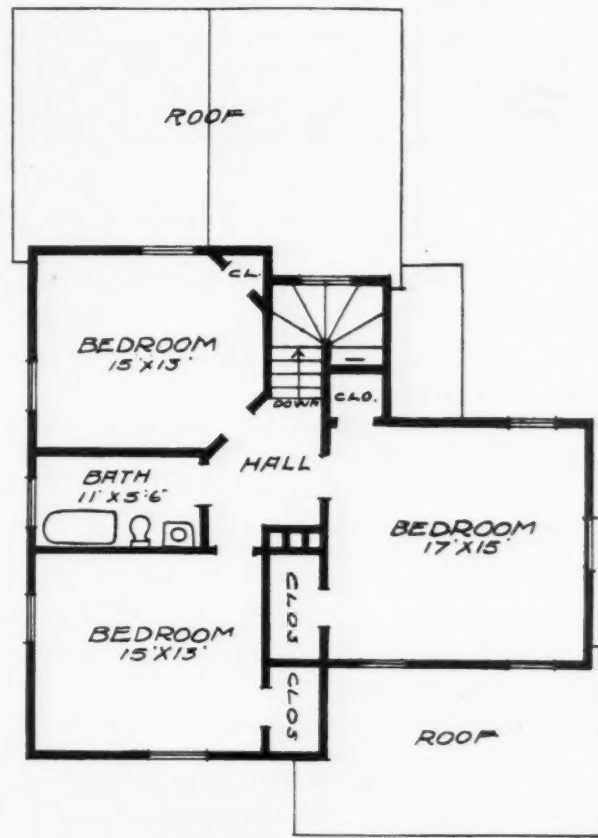
a science to a certain extent, although not every estimator is a scientist, far from it. Perhaps a few words should be said as to how estimating is done and trouble avoided. Of course, experience is the

work separately, in which case add the profits to each branch.

Always itemize your bid as, all excavating, brick work, cut stone, carpentry, plumbing, etc., thereby



Farm House—First Floor Plan



Farm House—Second Floor Plan

best teacher; but some counsel may be ventured, and nobody hurt.

In the first place, there is no proportion of time in estimating. An estimator may spend three or four days in figuring a small piece of work and then only require a few hours' time to estimate a large job. Do not tell an architect over the telephone that you can estimate a job in two hours until you have seen the plans. Do not risk your money at too fast a pace. In making up an estimate it is better to keep each factor of a complete estimate separate as much as possible; to finish it and double line it and to make a summary at the end of all the different items or classes of work, so that in case any change in specifications is made in any one class of work the whole will not have to be added and corrected from page to page. The same system should be carried out with subheadings. For example, in brick work you may have twenty different items. If the whole is put down as so many cubic feet or thousand brick, there is no way of separating a change without going over the whole job again. Only a few extensions will have to be changed to get the exact cost. Follow the specifications as near as possible item by item, starting with excavating or whatever may come first, keeping each branch of work separate, carrying extensions out to the cents and add the profit at the last, in one item, unless you bid on each branch of

eliminating any hidden work that may not show on the plans or may not be mentioned in the specifications.

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Living up to the Name

She (on the Atlantic liner)—Did you observe the great appetite of that stout man at dinner?

He—Yes; he must be what they call a stowaway.

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How You Wear 'Em

All was quiet in the sleeping car, save that an occasional snore from some blissfully unconscious tourist who was slumbering at the rate of forty miles an hour mingled unobtrusively with the rumble of the train. The last passenger had retired to rest.

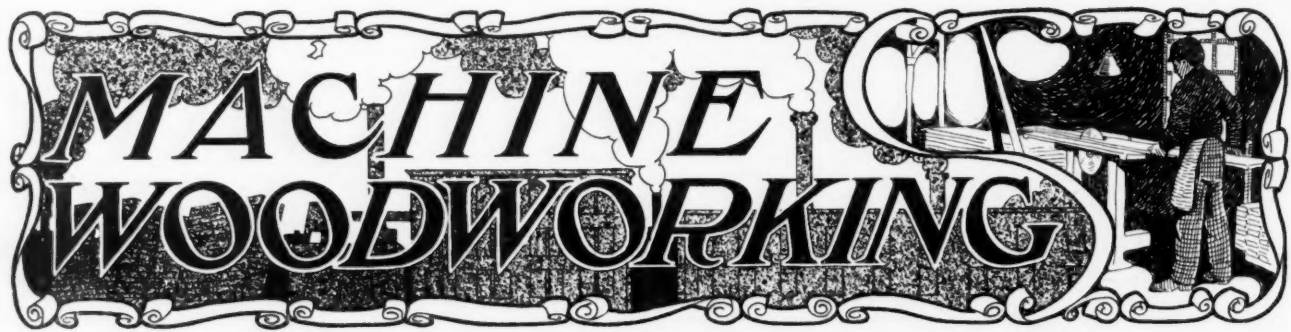
The porter tiptoed through the car listened a moment, and extinguished the lights.

On sped the train.

An hour vanished into the past.

Suddenly a loud, querulous voice, seeming to come from a lower berth near the middle of the car, broke the silence.

"Maria," snarled the owner of the voice, "these pajammys don't feel right. How do you put the blamed things on? Do you wear the coat outside or do you tuck it in the pants?"



Will it Pay to Install Machinery?

SOUND ADVICE FOR THE CARPENTER OR CONTRACTOR WHO THINKS OF STARTING A MACHINE WOODWORKING SHOP—BEST EQUIPMENT TO START WITH

By W. D. Graves

BLAYSDELL, who used to pride himself somewhat on his ability as a turner, once had as an interested spectator a young man of somewhat rural appearance. As he paused in his work to whet a tool the young man asked: "Does a man have to learn to do that turning, or can any one do it?"

The young man was a trifle verdant, it is true; yet he was not densely ignorant. His attitude toward machine woodwork was not so very different from that of many skilled and well informed mechanics in other lines. Doubtless we of the craft are inclined to be a trifle supersensitive and conceited, as, happily, are men of other crafts; but the fact remains that it takes something of trained skill to operate machinery to the best advantage. One contemplating the installation of a machine plant would do well to take measures to have some such skill and experience at command before investing too far.

In these days of readily available power in small units, and of highly perfected machinery for almost every imaginable purpose, there are few contractors and builders whom it would not pay to use some motor adjunct to hand labor. While the manufacture of all staple materials is so specialized as to make it unwise to attempt them in a small way, there are many odd jobs on which power may be profitably employed. Architects are constantly designing details not in any regular line of manufacture, and the best stocked dealers are apt to be short of some small items which are needed in haste. The working up of odds and ends, too, is daily getting to be a matter of more moment; and such things as furring, bridging and the like can often be made out of stuff which would otherwise be waste.

The increasing cost of lumber is constantly leading to the use of thinner stock; and the man who devises a method of making thin lumber serve the purpose of thick will have paid toll on the road to wealth. Most manufacturers cling to the time honored custom of charging the same for thin stock as for inch thick (they would be fools if they did not cling to it as long as possible); so a resaw may well be profitable in many localities.

Special sizes and styles of brackets, window frames

and turned work are but a few of the thousand and one things which could often be made to good advantage in one's own plant. But it is bootless to enumerate, for the needs of one man's business are different from those of another. Whether a machine plant will pay or not is a question which one is competent to decide only for himself; with the general premise that, if he employs half a dozen men or more, it will. It should ever be borne in mind, however, that the chances are all against the beginner in machine operation who enters into direct and equal competition with an established plant employing experienced operators. It being assumed that some sort of a plant will pay, the exact nature and size of it is a matter well worthy of careful consideration and study.

All too many, contemplating such an installation, say: "I know where I can get such and such second hand machinery, 'just as good as new,' for a song." To such let it be said, "Don't sing!" If you want machinery, buy new—and buy the best. Second hand machinery is generally sold for a reason; a reason that is overapt to dawn on one after he has bought and run it for a while. Really good second hand machinery doesn't go begging. It is true that one may, profitably, buy second hand machinery from reputable dealers; but such a purchase will generally call for a song with bankable notes.

It is possible that an expert machine operator may tinker up an old machine so that it will do good work for a while; but far more money is lost, than is made, in that way. It is at least certain that second hand machinery can not be up-to-date; and up-to-dateness often counts for as much as the whole cost of a machine.

The first and most essential machines in any wood-working plant will usually be circular rip and cut-off saw benches. These, if only one man is likely to be at machine work at one time, and if room is an item of material consideration, may be advantageously combined. The buzz planer is a machine the value and applicability of which is apt to be under-estimated by one who has never used it; and a band saw is pretty sure to pay its way in any locality. The lathe is generally of value only when there is available

a man somewhat specially skilled in its use. An upright boring machine, so set that a large variety of work may be gotten under it, is pretty likely to be found useful; and an emery machine is almost essential for keeping tools and machines in order, as well as for miscellaneous work.

Happily, lightly framed machines, and those with wood tables, have practically disappeared from the market; and caution against them would be super-

fluous. If any general rule for the purchase of machinery was capable of being formulated, it would probably be to the effect that one should seek weight and stiffness of frame, and should avoid clumsiness of running parts. A dollar "saved" in the purchase of a machine is very apt to be a hundred dollars thrown away. Whether or no it will pay you to put in machinery depends very largely, perhaps altogether, on whether you put in good machinery or poor.

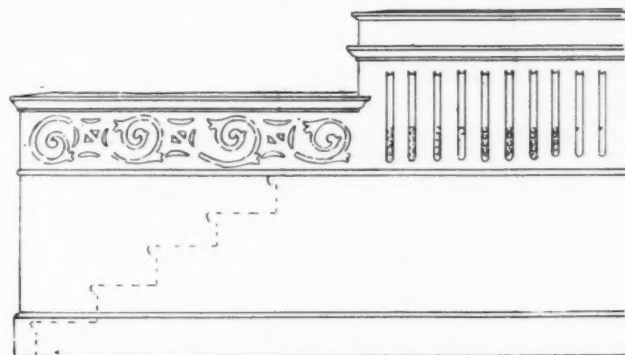
Modern Styles in Millwork

THE NEED OF KEEPING THE MILLWORK DESIGNS UP-TO-DATE AND IN HARMONY WITH THE CURRENT STYLES—SOME PLEASING DESIGNS PRESENTED

WHEN we attempt to consider the matter of style or fashions we are, at once, "up against" a very peculiar and aggravating proposition. There are fashions in all things used by man (which includes also women); yes, very much so! In fact, with some things "the fashion" is about all there is to it. More than that the style is constantly changing; and it is hard to predict with any certainty just what will, or what will not, find itself in favor during any coming season. Styles in millwork are not so flighty, to be sure, as with some other things we might mention. Still there are very perceptible changes from

and beauty may be incorporated in the most popular forms of construction. No material gives itself to such attractive uses as does woodwork. It is not intended here to imitate other materials, but to show how similar effects may be gained in frame work, where that material is suitable.

The skill with which woodworkers have, in the past,



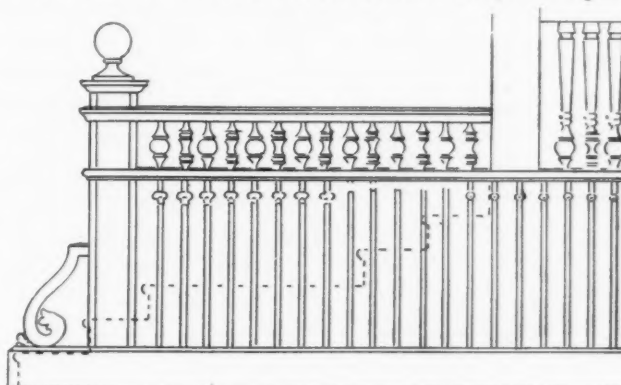
CHEEK.

year to year, changes in popular favor that the progressive mill man should study and try to anticipate as far as possible. Such study is made more easy and profitable, too, from the fact that fashions in mill work follow and correspond pretty closely with the tendencies in general architecture.

There is a creditable demand today for permanency and durability. Cement and concrete construction fulfill this requirement to a certain extent, supplanting other materials; perhaps because work in other materials has not always been as good as it should have been. Often the greater suitability of some other material, such as woodwork, is overlooked.

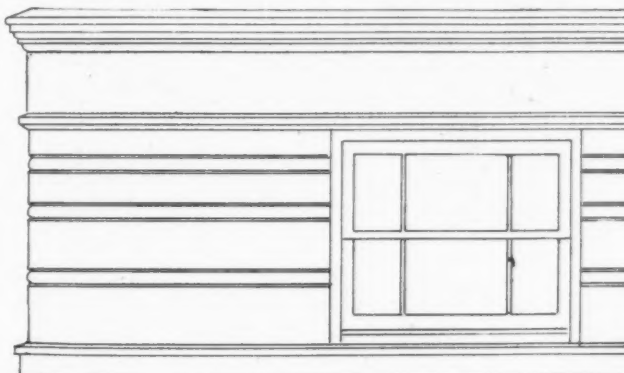
The first efforts of the designers to meet this style seem to be intentionally big, bungling and clumsy in their aim at massiveness. Furniture is made with a square rudeness in imitation of primeval methods. Houses are made to look like barricades; and joinery is glued up to look solid in the extreme. It is a condition that will have to be refined.

We present some designs showing how much grace



STEP RAIL.

handed out all kinds of sawed and turned work and panels has, perhaps, been never fully appreciated. Pretentious houses were filled with a mussy conglomeration of detail that was painstaking, but lacked order and appropriateness. Indeed, the amount of work involved, conveyed a very painful impression to many persons. Hence, the simple classic style was

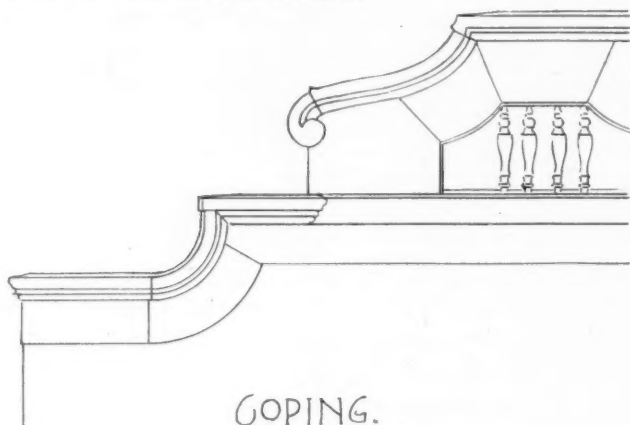


BASE.

readily introduced. Then the woodworker found himself shorn of all opportunity for the exercise of his ingenuity and originality. These are qualities, however, which will never be downed.

The problem now is to restore the beautiful and

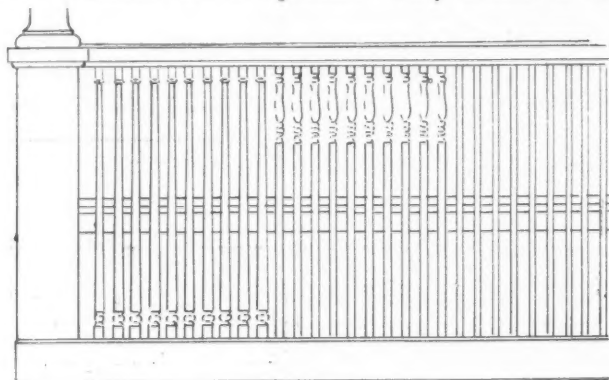
varied details which the woodworker loves to turn out. To have fewer pieces, fewer joints and more care for the general aspect is a great gain. This alone will secure the desirable breadth of treatment which is now in such demand.



Instead of imitating classic art it is much better to appreciate the principles that make that art beautiful. This would enable one to form an equally pleasing, although quite different, article in wood. There is more or less incongruity in mechanically copying the marble art of old classics in quite different materials.

Carpenters are often called upon to make square, substantial "cheeks" for porch steps to butt against. If not made of plain board and some molding, they are often of beaded ceiling, which is somewhat inappropriate. The designs herewith show how to ornament them with scroll and beaded work without being fussy. The long molding and broad flush surface overcome that.

The "step rail" is a similar design. It will be seen that the usual return corners at the post are absent. The top rail should be full width of this post, and have a double row of spindles. They should be far



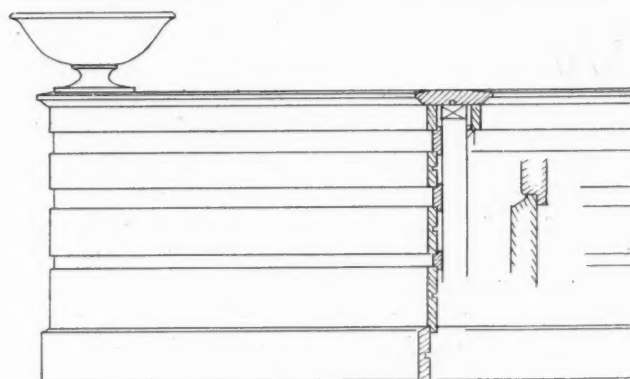
enough apart for the painter to get his brush in. The solid beaded stuff has a boss at the top of each bead. A single touch like this takes the most commonplace article out of the ordinary.

The basement wall of houses looks better in evident woodwork than as an imitation of stone or the painted imitations of brick. The most substantial appearance may be gained by considering the entire basement as a base for the superstructure. Furring out to gain some projection also helps. This method is shown in

the design for a "base." The three massive beads at the joints are also effective. The graduated width of the courses increases the gracefulness of the appearance.

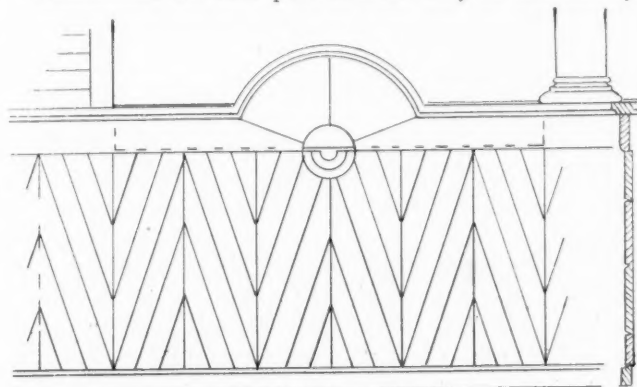
Scroll "coping" is often in demand. If there is a small fillet or bud at the joints they will not seem to warp out of place. Expanse of wall surface is not always necessary to convey an impression of immensity. A small opening and a few spindles will suggest the idea in true esthetic spirit.

The "porch rail" diagram shows how spindles or balusters are made to extend from the ground, past



the porch floor to the hand rail above. They may be plain square pieces or turned in various ways. This solves the problems of the upper and lower spaces at once.

Sometimes the rear part of a lot may be sufficiently



screened with a low "terrace." Some evident taste in arranging the boarding might often make woodwork acceptable. Even molded edges may not be necessary. There is many a board fence that might have been made into something artistic, and equally cheap and useful.

A "dado" in matched lumber is also shown. The water spout gives it an air of individuality.

All kinds of work in the course of time need repairs. It is well to bear this in mind and see that repairs may be easily made when necessary.

Every season brings desirable modifications of past styles as well as entirely new fashions. They are the combination of all our individual efforts. Within reasonable bounds they freshen up trade and business and should be encouraged.



Not the Best Method

To the Editor:

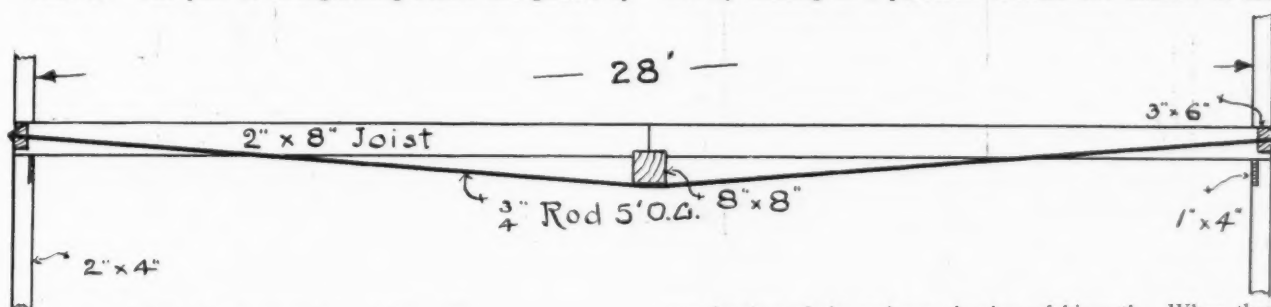
Naples, N. Y.

I was asked to draw up a plan and specification of a store house. I send you a copy of their idea. The building is to be 28 by 70 feet, $\frac{3}{4}$ inch rods to be 5 feet apart (14 rods altogether). It is to be a wagon dealer's store house; its capacity to be from 10 to 14 tons. Will you please send me your idea?

FRANK HARVEY.

Answer: The plan of strengthening beams and girders by

a good many methods, but knowing how difficult it is to procure some of the ingredients and to properly mix and apply them without long practice, we will give you the simplest one that we know of. The first requisite is to have the side of the glass to be silvered very clean and dry, and it is best to clean the glass first with fine chalk or whiting dampened with alcohol, then wipe it over with a little alcohol and rub dry with fine tissue paper. Make a liquid preparation by melting in a porcelain crucible one drachm of lead,



Mr. Harvey's Sketch

shallow trussing with an iron rod has very little to commend it, and is scarcely ever used in modern practice. Instead of that, for a span such as you mention, 28 feet, a much better plan would be to place solid timber girders at intervals of about 8 feet across the building, the floor joists resting on these and running lengthwise of the building. Seven girders of hard pine, 8 by 12 inches, would be amply sufficient to carry moving loads such as would be carried by the floor of a wagon builder's shop. The distance between them would only be a trifle over 8 feet and thus small joists could be used.

Or, better still, in any of the eastern portions of the continent, you might use rolled iron I beams instead of the hard pine girders. For sizes to carry certain weights for various spans, the tables supplied on application by the makers of these beams will give you all information.

But for either of these, or for any kind of girder, your method of support at the sides of the building, as shown in your sketch, is most unsatisfactory. A riband of 1 by 4 may do fairly well to support the upper floors of an ordinary dwelling house; but for a class of building where the floors have to sustain considerable weight, the joists or girders should rest on a solid plate on the tops of stout studs or posts.

T. B. KIDNER.

One Way of Silvering Mirrors

To the Editor:

Minden, Iowa.

Being a subscriber to your paper I would be glad to have you give me all the information you can in regard to mirror plating, and where I could procure the solution to do it with. I have inquiries concerning the above occasionally; so, if I can make arrangements, I will take same in with my business as a side line. If you could help me in the matter it will be appreciated.

H. J. CARSTENS.

Answer: We have published in these columns off and on

one drachm of tin and one drachm of bismuth. When these are melted and before the mass cools, add ten drachms of mercury (quicksilver). It is now cool enough for immediate use. Lay your glass flat with the clean side up and pour the liquid over it, so that all of the surface is covered, then raise the plate to nearly perpendicular position and let it drain off quickly. When the liquid has become perfectly dry and hard on the glass it should be coated with drop black ground in japan, thinned with turpentine, which will insure greater opacity and wearing properties.

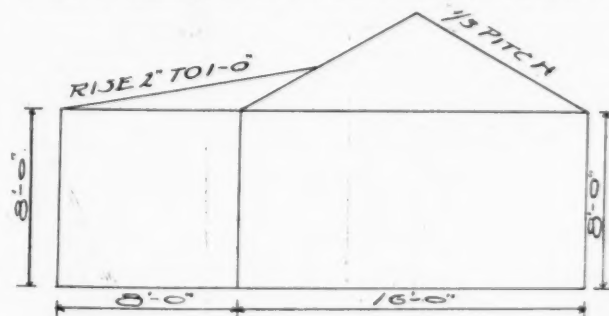
A "Sticker"

To the Editor:

Worden, Ill.

I enclose herewith what looks like a simple problem, but it has "stuck" school teachers. If you have room in your columns I would be pleased to see what our carpenters will do with it. We want a mathematical solution independent of the steel square.

I have a building 16 feet wide, 8 feet to top of plate, one-



third pitch roof, to which I desire to attach a shed 8 feet wide, 8 feet to top of plate, rise of rafter 2 inches to the foot. What is the exact length of shed rafter from plate to point of intersection with rafter on main building?

Also, what is the distance on main rafter from plate to top

point of intersection with shed rafter? Figure as though top edge of rafters makes intersection with outer edge of plate. Give mathematical solution.

R. L. RICKS.

Roof Pitches and Degrees

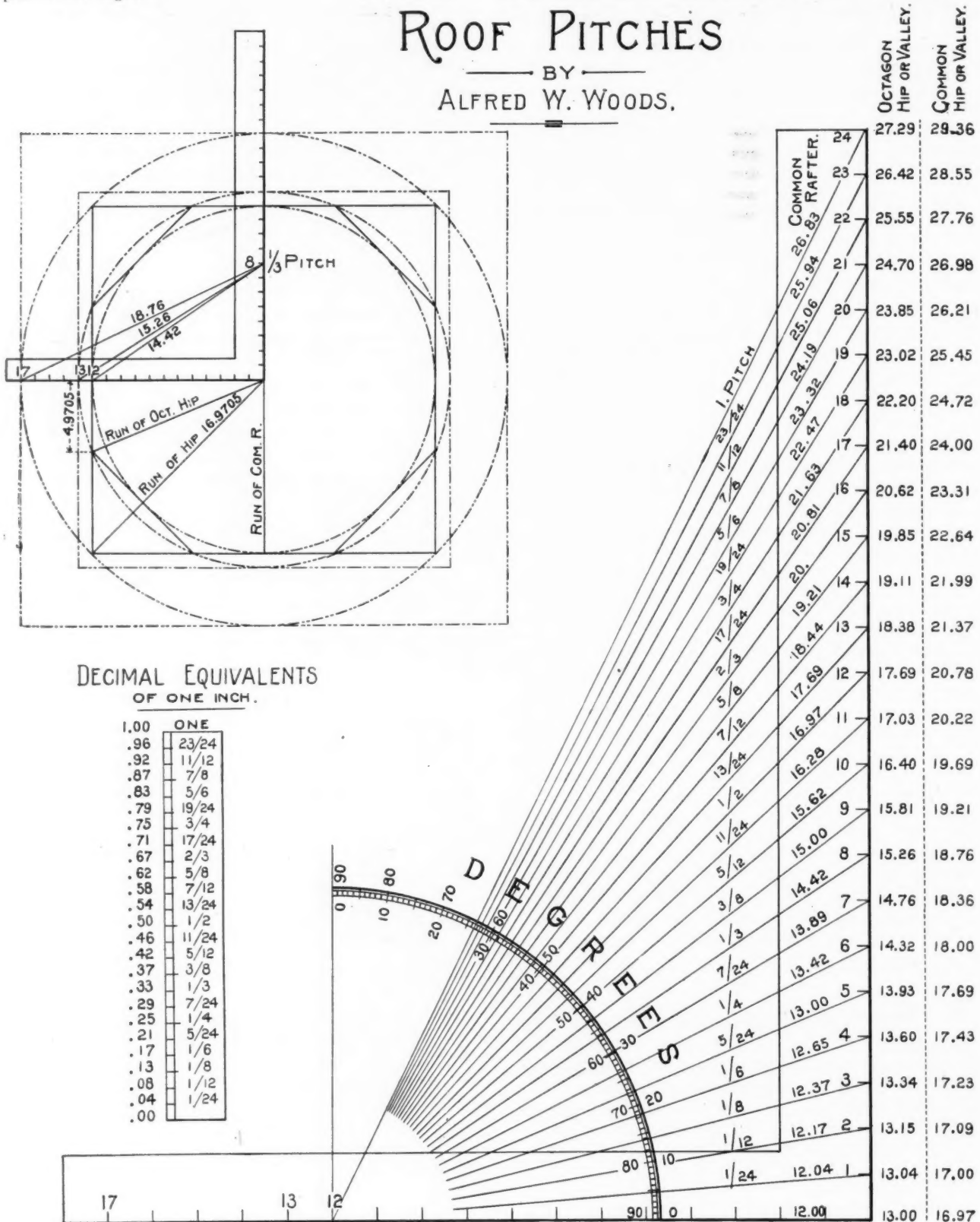
To the Editor:

Peabody, Kan.

A great many of your recent new subscribers would like to see published again in the AMERICAN CARPENTER AND BUILDER that diagram and article explaining all about roof pitches and degrees.

T. J. HOLLER.

Answer: This illustration contains a whole volume on roof framing. The fractional pitch lines for the common rafter are shown for each inch in rise up to the full pitch, and their lengths are expressed in decimal figures to the one-hundredth part of an inch, while to the right of the blade the same is expressed for the corresponding octagon and for the common hip or valley for a square-cornered building, which are reckoned from 13 and 17 on the tongue respectively. However, neither is absolutely correct, though near enough as far as the cuts are concerned. The greater deviation being



in the hip for the square-cornered building. It lacks .0295 of being 17 inches and represents the run of the hip to a 12 inch run of the common rafter. Its true length being 16.9705 inches, this is the length from which we have reckoned for the lengths of the hips instead of 17, as is the usual custom. This may seem a trifling difference, and so it is in a short run and low pitches; but suppose it is for iron construction. To begin with, the shortage of each foot in run with the common rafter is .0295 of an inch; added to this the gain it would have in the pitch, which would be .015 of an inch by the time it got up to the full pitch for the common rafter; and this added to the .0295 to start with, would be a difference of .0445 of an inch to the foot in run with the common rafter. Now suppose the run to be 18 feet; 18 times .0445 equals .8 plus, or 19/24 of an inch difference; or, if no account was made of the gain in pitch, the .0295 of an inch in the run would amount to over half an inch in the length of the hip alone. This is a common error, and while it is not much, and probably would never be noticed in wood construction, it is well to know this discrepancy and guard against it when the occasion demands, and for that reason we give the correct amounts. The shortage in the octagon is not so pronounced. Instead of it being in the run, it is the tangent that is lacking the same amount, it being 4.9705 instead of 5 inches. This, coming as it does, cannot affect the length of the rafter nearly so much as in the above.

We explain this shortage better by referring to that part of the illustration showing the plan of a combination square and octagon frame with the heel of the steel square resting at the center. From this it will be seen that the two outer circles catch the corners of the frame and seemingly intersecting the tongue at 13 and 17 and represent the figures to use on that member for the seat cuts, but the true length of the run of the hip is 16.9705, and that for the tangent of the octagon is 4.9705.

In connection with this illustration we also give a table of decimal equivalents to the one-twenty-fourth part of an inch for convenience in finding their value in common fractions.

A. W. WOODS.

A Homelike Place

To the Editor:

Chilton, Wis.

You may be interested in the design of my new house, photos of which I inclose. You will notice on the front the porch extending around the building to the first window of bay. This I had changed to a door; and it makes a very



convenient arrangement. On the south view you will notice the balcony over the porch, which is accessible from the bed room, and very handy to use in airing bed clothes, and

in spring and fall for general cleaning purposes. There is a porch in the rear which leads from the kitchen, a portion of which is partitioned off for the ice box (very handy).



The house is considered one of the most complete and best arranged in the city for its size.

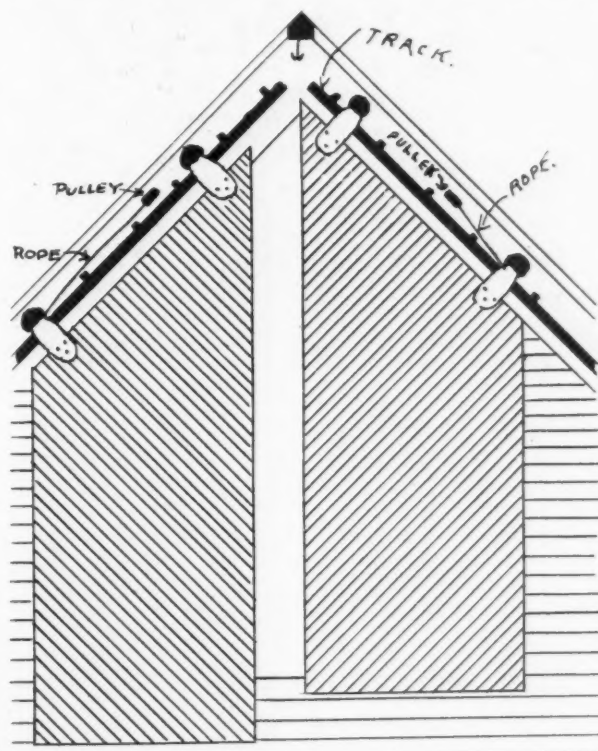
JOHN HOCH.

Arrangement for Hay Mow Doors

To the Editor:

Holbrook, Neb.

I see in the January number of AMERICAN CARPENTER AND BUILDER you have two ways illustrated of hanging hay doors on a large barn. I inclose sketch of my way of hanging



large barn doors, which has given good satisfaction wherever it has been used.

Any flat barn door track will do. A 3/4 inch rope is tied to the lower hanger and run through a 5 inch wooden pulley set in rafter; from there it is run down inside of rafter 3 or 4 feet to another pulley; and from there to a small weight below, which will run between two studs. Hanging a door this way does not take as heavy a weight as running it up and down the grooves, and it runs more easily. When doors are both closed they can be fastened together on inside with a hook. Bumpers on the outside of the barn prevent them from running off the track.

GEO. W. BICK.

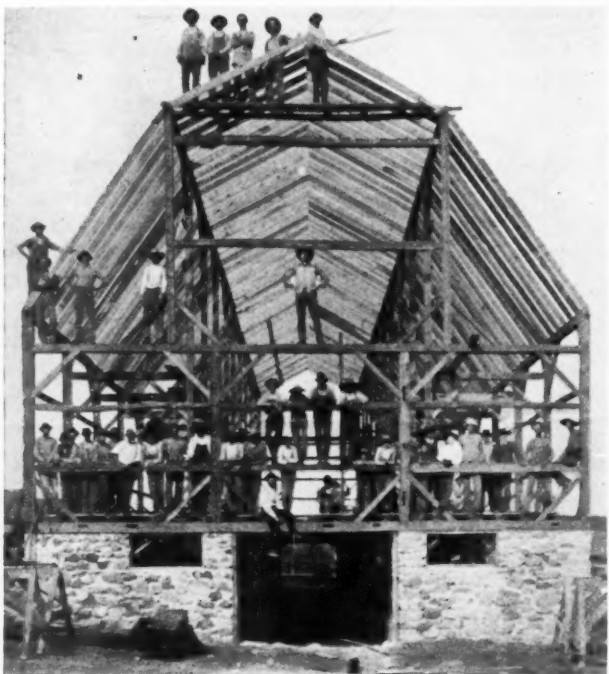


The Biggest Barn

To the Editor:

Mukwonago, Wis.

Here are photos of a barn I built last July for Mr. Arthur Rogers. It is, to date, the biggest timber frame barn in



Wolworth county. The size on the ground is 36 by 136 feet. It stands on an 8 foot stone foundation basement and is 15 feet from sill to plate. The ridge pole is 40 feet above the ground.

This barn was framed by myself with five men in eight days, a good many of the timbers from the previous barn on that site being used. It was all put together and raised in seven hours' time by forty-five men. The barn is arranged for 12 horses, 40 cows and about 200 sheep. The cost was very close to \$3,500.

H. J. MATTHEWS.



Information Wanted

To the Editor:

Campbellton, N. B.

Will you please be so kind as to ask some of the readers of the AMERICAN CARPENTER AND BUILDER to answer the following question:

Which is the proper way to get the height of stair rail, also the way to line out the newel and landing posts, so as to get the right cuts for the rail and balusters?

J. C. MANGER.



Cement Arch That Cracked

To the Editor:

Osborn, Mo.

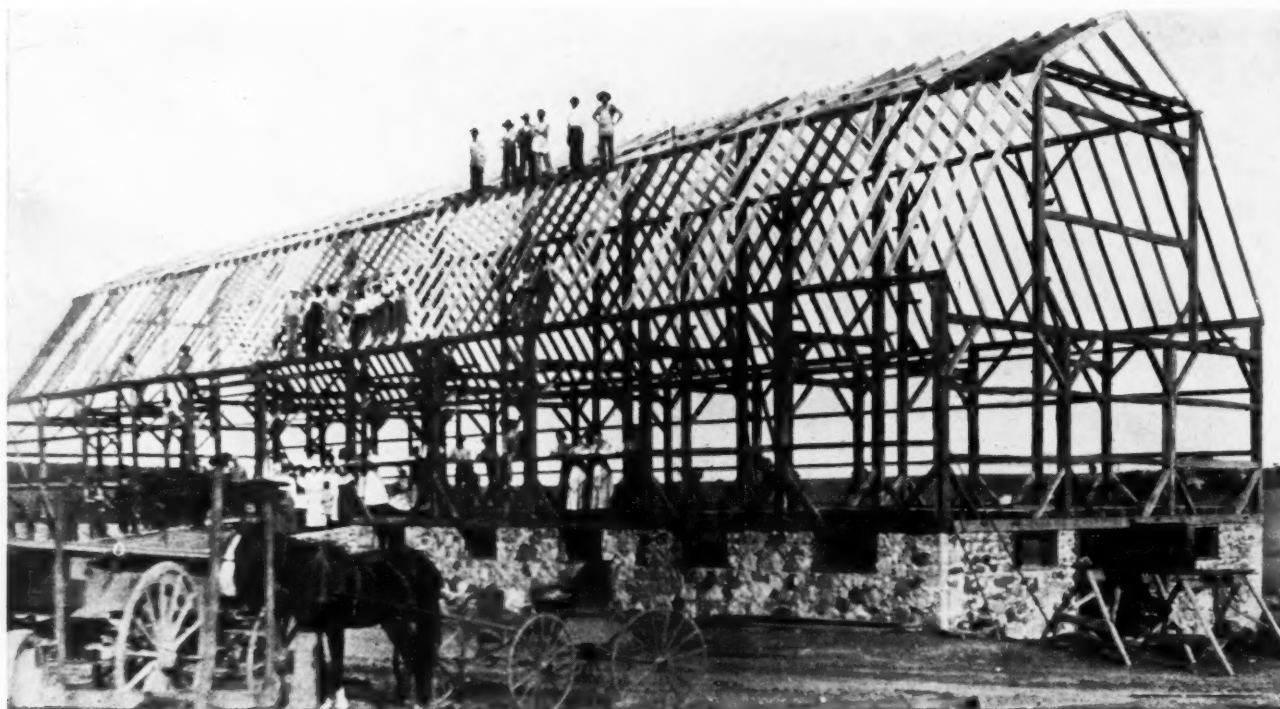
I would like to have the privilege of asking a little advice. I built a cellar of cement, 12 by 6 feet wide, and arched it with cement about 4 or 5 inches thick. The cement was mixed four parts sand and one part best Portland cement. After the arch had been made about 12 hours, it cracked each side lengthways, about 2 feet from the top of arch and also where it connected with the end walls. I would like to know the cause and remedy for the same.

T. W. BAILEY.

Answer: The cracking of your concrete cellar arch was due to one of two causes: First: settling of forms before the concrete had become hard; the crack at the end of wall strongly indicates this as the sole cause. Second: poor quality of sand, which will sometimes cause cracks or breaks when concrete is a few days old.

I hesitate to suggest a remedy other than a new arch. The present arch, even though cracked, may be of service for years.

FRED W. HAGLOCH...

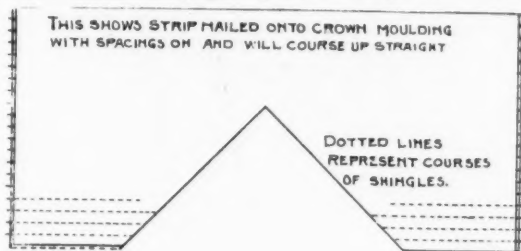


Some Practical Suggestions

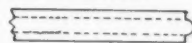
To the Editor:

Leland, Ill.

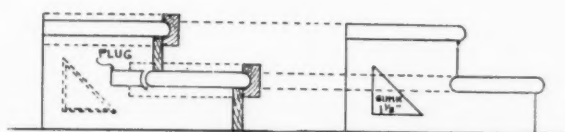
As the winter evenings are here again, I will try and tell a few kinks. The first one is on shingling, and I herewith submit a sketch of same, which will show more clearly what I mean. I have seen where two are shingling, each in opposite valleys, that one would have a course or two more than the other when they get up high enough to cross over the



PIECES FOR END
MOSING ON THREAD.



PIECE FOR MOSING ON FRONT
OF TREAD SHOWING END OF SAME ONLY



FORM FOR STEP

FINISHED STEP

ridge, being out of level with each other's work, all on account of a little difference in measuring. I take two narrow $\frac{7}{8}$ inch strips, tack them together and set compasses at distance I want to show to the weather, and space the two together so that they will all be alike. Then I separate them and tack one on each end of the roof on crown mold with the spacings on the outer, or face side of strip, so that they can be plainly seen. I use thickness of strip as guide to start outside, or first shingle, and when done, I take strip off.

I will now describe how I make concrete steps. Some get them so muley, or smooth looking; no nosing on the treads. I take an old discarded pump stock, rip in two and screw it on the riser firmly to form the nosing of the treads. The front piece is made longer than the riser and the end pieces are formed to butt into groove of the front piece. These pieces I use over and over many times, but the pieces for the risers and treads vary as to the run and rise required, and consequently have to be worked over or new pieces used. I also put in a three cornered block $1\frac{1}{2}$ inch thick on the inside of form on the ends, to form a panel to break up the smooth surface. This piece should be cut with a slight bevel, so that it will come out easily when the form is taken down. I use dressed boards for forms, and smear the surface well with soft soap, which will keep the cement from adhering to them and consequently gives a smooth surface to the steps.

J. E. NELSON.

Proper Truss Framing

To the Editor:

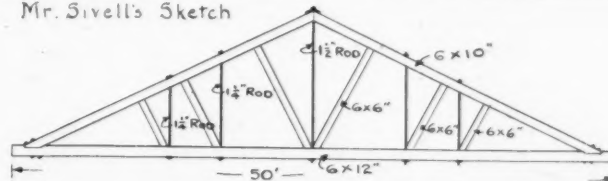
Henry, Ill.

I would like to know if I am right or wrong in regard to framing a truss. I am putting up a building 50 feet by 70 feet, truss roof. The man that got up the plan marked both chord and principal rafters 6 by 10 inches. He also made out lumber bill and ordered the same; but when the timbers came half of them were 6 by 12. I used the 6 by 12 for the chord. He says I did wrong by doing so.

R. J. SIVELL.

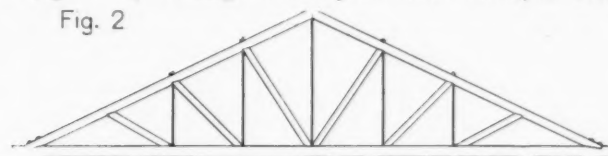
Answer: You were quite correct in using the 6 by 12 inch timbers for the chords, and even then they are lighter than they should be for such a span.

But if the truss was actually framed according to your sketch (reproduced), a serious mistake was made. Instead Mr. Sivell's Sketch



of the upper ends of the struts meeting the principal rafters where you show them, midway between the places where your rods are inserted, they should be framed into the principal rafters exactly at the points where the rods hang, as shown in Fig. 2. By framing them as your sketch shows, all sorts

Fig. 2



of leverage stresses are set up in the principal rafters; but, more important still, instead of the panels forming a series of triangles, as they should, they form quadrilaterals, and hence lose rigidity. The theory of trusses has been explained in earlier numbers, but it is so important that it will bear repetition and is therefore given briefly again.

A simple truss, as in Fig. 3, would, of course, spread at

Fig. 3

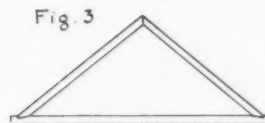
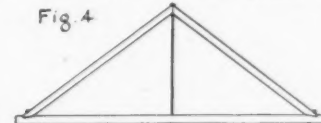
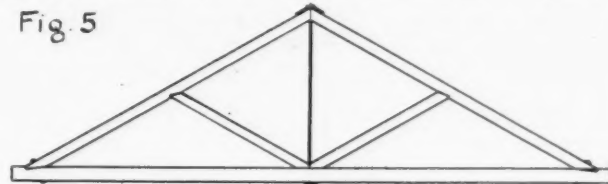


Fig. 4



the foot were it not for the chord or tie beam. When certain small spans are exceeded (18 or 20 feet) the chord itself has a tendency to sag in the middle from its own weight and has to be hung up by a king rod or post, as in Fig. 4. But with a still further increase in the span, the principal rafters have also become so long as to require a

Fig. 5



support in their centers, so struts are inserted which press against the tie beam at the foot of the king rod and push up against the rafters as in Fig. 5.

For greater spans, such as in the case about which you write, other rods are inserted from the points of junction of these strutting pieces with the principal rafters and these rods in turn hold up other struts, as well as the tie beam itself, at intermediate points. It is therefore evident that if your struts are placed as in your sketch, they are not doing their duty properly, as they are holding up against the principal rafters at some distance from the points where the rods are hanging from them.

T. B. KIDNER.

Resurfacing Cement Floor

To the Editor:

Ozan, Ark.

In answer to Mr. D. B. Cox, who asks in the January number regarding the resurfacing of cement floors; this is the way I do: First take up the dressing down to the foundation. Do this by means of a chisel and a hammer, to start a place. Then take a pick and pick under the edge of the piece you wish to take up, just as though picking under rock. When the defective dressing is all nicely cleaned off, put on new dressing just as you did at first, only this time finish up before you leave it.

W. B. ASH.

How to Lay Out Hip and Valley Rafters

To the Editor:

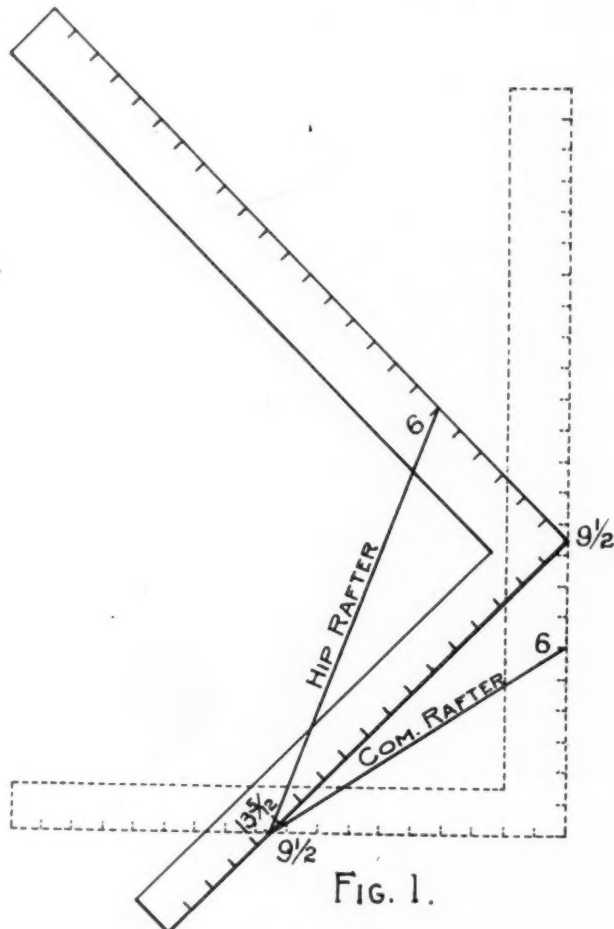
McGregor, Iowa.

I wish to ask what is the proper method of laying out stair stringers, also hip and valley rafters. JAS. KADLETS.

Answer: The first question is pretty thoroughly answered in the March, 1908, number of this magazine.

As to the second question, it has also been answered many times in the course of our work, but as there are different ways of illustrating the subject, it is one that furnishes a problem that is not generally understood by the majority of carpenters.

In our own work, we prefer to work on a full scale for a one foot run, and most of our illustrations have been on



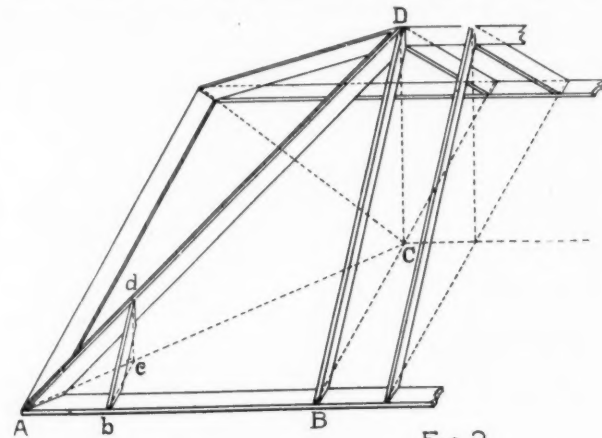
that basis, but in this, we will work to a scale of one inch to the foot. The twelfth inch divisions on the square will then represent inches.

For example, we will take a building 19 feet wide with a 6 foot rise. Now, since the run of common rafter is one-half of 19 feet, which is 9 feet 6 inches, we will take this amount on both blade and tongue, and a line connecting these figures will represent the run of the hip. The length of this line taken on one arm of the square and the rise on the other, the lengths of the rafters are found per scale, as shown in Fig. 1.

The position of the rafters in the roof may be better understood by referring to Fig. 2. B C represents the run of the common rafter and represents the same length as A B. A C represents the run of the hip and C D the rise. A D represents the length of the hip and B D the length of the common rafter. The respective run and rise taken on the square will give the seat and plumb cuts. The figures that are used for the cuts of the common rafters also apply to the jack because it is a part of a common rafter. Or its individual parts may be taken as shown by like letters in the

lower case, but an additional cut is required to fit against the hip. This is found by taking A B on one arm of the square and B D on the other; the cut will be on the side which B D is taken, or the individual parts of the jack may be taken, which will give the same result.

In the case of a square cornered building, A B and B C



being of equal lengths, the latter is generally supposed to be used, because it represents the run, but this is a mistaken idea. It gives correct results for the square cornered buildings, but for no other, and is therefore not a general rule. On the other hand, if the distance from the corner to the foot of the first common rafters, as at A B, and its length (the rafters) is taken as above described, it then becomes a general rule and will give the side cut of the jack whether the building is square cornered or not. A. W. Woods.

+

A Comfortable Farm House

To the Editor:

Chillicothe, Ill.

I have today received the January issue of your valuable paper, and I can assure you that they are always received and read by me with a great deal of interest. Although I have been in the contracting business for several years I get a great many pointers by reading the AMERICAN CARPENTER AND BUILDER.

I inclose a picture of a farm house that I built last year



near this city for John S. Gallup. It may be of interest to some of your readers. The first floor has large kitchen, pantry, bedroom, parlor and dining room, with open stair leading to second floor. Above are four good sized bed rooms, four closets and bath room. The cost complete, with furnace heat, gas lights and water system, was \$3,000.

H. W. SEELEY.

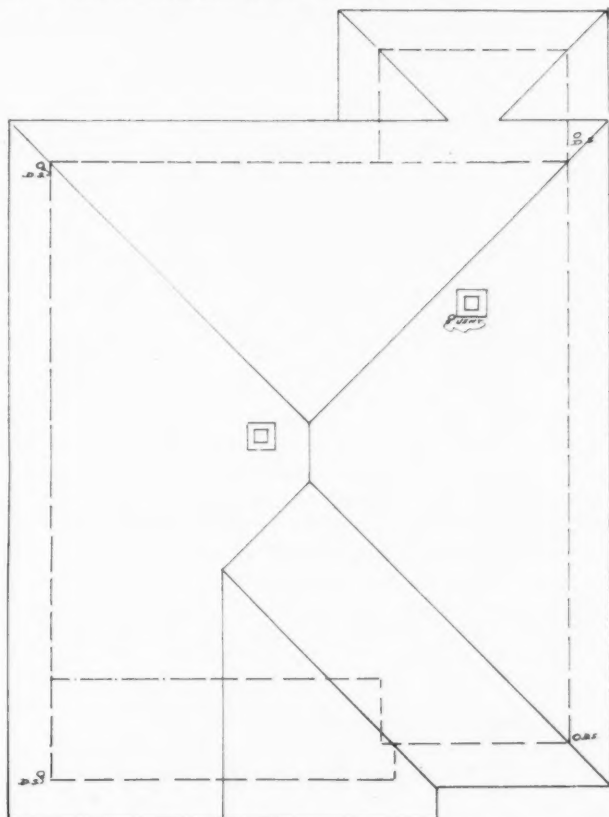
Cottage Roof Plan

To the Editor:

Janesville, Cal.

I am much interested in the cottage design given on page 168 of your November issue of the *AMERICAN CARPENTER AND BUILDER*, and knowing of two ways to construct the hip portion of the roof I am asking:

Are the hips supposed to be regular and the valleys irregular, or the construction to be the reverse.



If the valleys are regular and the hips irregular the shingles have a better appearance from a front view.

If possible please give a complete roof plan in your next issue. I expect to build a cottage like this and would be glad to know the proper way. WM. D. WILBUR.

Answer: A plan showing the roof of the cozy little cottage in question, as it was built, is shown herewith.

To Estimate Brickwork

To the Editor:

Toronto, Ont.

I have been a reader of your valuable paper since the first year, and look forward to its arrival, as there is always something interesting and useful in it, especially on estimating lately; but have not seen anything about footings. I would like to know how many bricks per lineal foot (or foot run measure) it will take for a 9 inch wall, 13 inch wall, 18 inch wall, 22 and 26 inch wall, using $8\frac{1}{2}$ and 9 inch bricks; also the width of the different footings. In superficial measure I have been allowing $7\frac{1}{2}$ bricks for each 4 inches of wall (width of one brick), but have been told that 6 bricks is plenty, using 9 inch brick (or $8\frac{3}{4}$). Of course, I allow 5 per cent for breakage, etc. J. J. H.

Answer: There is scarcely any other material used in building about which so many ideas and customs of measuring and estimating prevail as in brickwork, and it is very difficult, if not impossible, to give a rule to fit all localities. The writer has before him a list of nine leading standard makes of American bricks and one well-known imported firebrick, and no two sizes are alike. Your rule of allowing $7\frac{1}{2}$ bricks for each superficial foot of wall one brick (4 inches)

in thickness is pretty general in all districts where the eastern standard brick is in use (about 8 or $8\frac{1}{4}$ by 4 by $2\frac{1}{4}$ inches). But the trouble is that no two brickmakers seem to turn out bricks exactly alike, and thus it may be that with bricks from certain kilns 6 bricks would be sufficient.

Another plan is to cube your walling and estimate 21 bricks per cubic foot, which is a fairly safe method for bricks of the size mentioned above. It is often usual, however, on large jobs of brickwork, for the builder to specify a minimum size for the bricks, so as to guard against losses from estimating that a certain number will build so much walling. Allowance must also be made for the size of joints, which may vary from $\frac{1}{8}$ inch for pressed brick up to $\frac{1}{2}$ or even $\frac{3}{4}$ inch for common brick. A wall with $\frac{3}{4}$ inch joints will take 12 or 15 per cent less bricks than one with $\frac{1}{8}$ inch joints.

The following table of the number of bricks per lineal foot for brick footings with offsets of 2 inches to each course is in pretty general use, and is fairly reliable, although subject, of course, to the variations noted above, caused by bricks of different localities varying in size:

9 inch wall, footing 2 courses,	$10\frac{1}{2}$.
13 inch wall, footing 3 courses,	$22\frac{1}{2}$.
18 inch wall, footing 4 courses,	39.
22 inch wall, footing 5 courses,	60.
26 inch wall, footing 6 courses,	$85\frac{1}{2}$.

In Great Britain and some of her colonies which have formally adopted the British system of quantity surveying whereby the quantities of all materials are "taken off," "abstracted" and "billed" from the architect's drawings and specifications by clerks who make a specialty of this work, all brickwork is reduced to rods of $16\frac{1}{2}$ feet by $16\frac{1}{2}$ feet of $1\frac{1}{2}$ bricks in thickness. With the standard English brick of $8\frac{3}{4}$ inches long by $2\frac{3}{4}$ inches thick, with $\frac{1}{4}$ inch joints, this gives 16 bricks for every superficial foot of "reduced brickwork," as it is termed, and forms an excellent basis for estimating prices.

T. B. KIDNER.

Typical Village House

To the Editor:

Mt. Victory, O.

We are inclosing a photo of a well planned house which we have built the past fall. It has a basement under the entire house, wall being built of cement blocks. It is sided with patent siding and the roof is covered with slate. The interior finishing is of yellow pine. This house consists of seven rooms, closets and bath room and was built for \$1,800.



We believe this house is representative of the average priced houses being built in this section of the country at the present time. While there are many houses built here costing more, yet this makes a very good house at a moderate cost. With best wishes to the *AMERICAN CARPENTER AND BUILDER* for the new year, we are,

H. C. BENNETT & SON.

PRACTICAL TRADE APPLIANCES

An Extension of Business

The Cordesman-Rechtin Company, of Cincinnati, Ohio, builders of high grade woodworking machinery, announce that they have established a branch office at 2714 West Lake street, Chicago, Ill., for the convenience of their many friends and customers of that city.

Berger Convention of 1909

Three years ago was held the first organized convention of the Berger sales forces. The convention of the year following surpassed in attention and general interest the one of 1907; and the present year marks the largest—and from every indication the most successful—gathering of the three.

This year, as never before, the coming together of the sales forces, from various parts of the constantly widening field of effort, has been looked forward to with unusual interest and enthusiasm by both travelers and home office. The renewing of pleasant fellowships; the forming of more intimate personal acquaintance with those whom, during the year, are reached mainly through cold type or concise telegram; the opportunity for renewed interchange of helpful ideas; the refreshing or increasing of one's knowledge of

the things which contribute to sales efficiency; the formulating of plans based on past experience; the perfecting of methods that tend to improve administration without involving unnecessary detail; and the enthusiasm and stimulus born of renewed confidence and determination; these things have their part in making relations more cordial and work more effective. That their consideration, therefore, should produce correspondingly beneficial results to all concerned, every indication logically points.

Intelligent salesmanship has its value not only to the seller but to the buyer. What the world demands of the salesman today is, the enlarged knowledge which enables him to intelligently and specifically present his wares to the discriminating buyer. He must know his line and be able to present it logically, concisely and clearly, without unnecessarily taxing the time and patience of busy men whose trade he seeks; and to this end there exists a three-cornered interest between factory, salesman and buyer that these conventions should promote, that broad knowledge of affairs so mutually desirable from these various standpoints. The pictures of those who were present and participated in this 1909 convention are shown herewith. The numbers correspond to those in the photo on page 550.

WORKMEN ARE NEVER DROWSY

where ventilation and light are good. Therefore, more good work is the result.

Burt Combination Skylight Ventilators

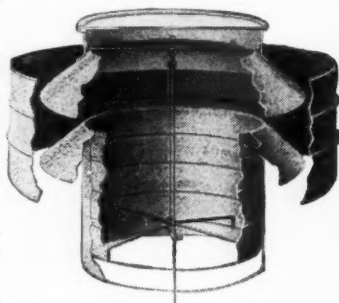
have the greatest ventilating power of any. They are made from the very best of material, strongly braced and will give lasting service; made with Metal or Glass tops as desired, provided with Patent Sliding Sleeve Damper, Storm and Dust Proof, open or shut, and adjustable to any degree of opening.

Send for our new 96-page catalogue, giving fine illustrations of Mills, Factories, Shops, Foundries and Residences where Burt Ventilators are in successful use.

THE BURT MFG. CO.

500 Main Street
AKRON, OHIO

The Largest Manufacturers of Oil Filters and Exhaust Heads in the World.

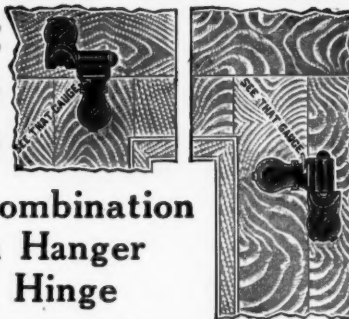


Notice Sliding Sleeve Damper.
(Patented.)

Geo. W. Reed & Co., Montreal, Sole Manufacturers of "Burt" Ventilators for Canada.

4 Screws instead of 12

Is all it takes to hold the



Watrous Combination Storm Sash Hanger and Screen Hinge

Mounted Model Sent Free

A mounted model that shows the entire proposition on a working principle sent free of charge prepaid to any carpenter or interested person. Important literature on screen and storm sash hanging sent at the same time.

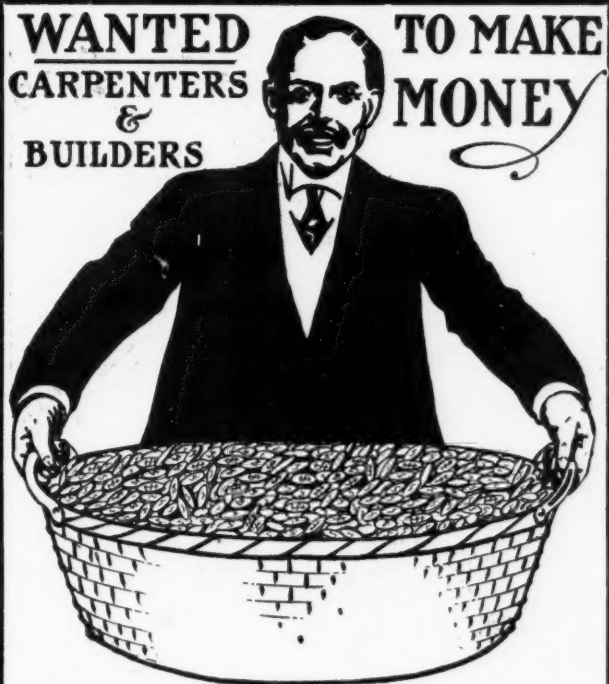
More Profit for Builders

Only four screws are necessary to hang any kind of storm window or screen, which means a great saving of labor, consequently more profit for the carpenter. In addition the sash or screen can be set more easily and more rigidly than by any other method. This is effected by a gauge and steel points on each hinge which insure positive accuracy. You simply adjust by the gauge and drive the points into the wood, therefore you always get your screens hung right, no guess work about it. Every hinge will bear 300 pound weight, and is japanned so it will not rust. It's the only hanger that will hang either full or half size sash or screens. It will hang sash from top or side casing.

Remember this model costs you nothing. It's free. Just drop a card, we do the rest. Do it today.

516 So. 9th St. The E. L. Watrous Mfg. Co. DE MOINES, IOWA

**WANTED
CARPENTERS
&
BUILDERS**



**TO MAKE
MONEY**

Carpenters and Builders

We want you to take up the Slate Roofing Business this spring and handle our

SEA GREEN & PURPLE ROOFING SLATE

because it is a first class money-making proposition, offering big possibilities

Take your locality for instance—every year there is considerable new work, all requiring roofs. In addition, there are also simply hundreds of old, patched and worn-out roofs that **MUST** be replaced.

Now, we claim—and you know this to be true—that the average owner is tired of paying out his good money for short-lived roofing—high priced shingles that don't last—tin and metal that cause frequent and costly paint bills and these composition and "oids" roofings conceded to be of small value. And we further claim that the public are willing to pay and will pay a fair price for a roofing that actually gives good service. Now, take **OUR**

Sea Green and Purple Roofing Slate

here is a time tried roofing material that **ABSOLUTELY CAN'T WEAR OUT** (we personally know of slate roofs 75 years old as good as new). It can't rust, warp, crack, tear or decay. It affords spark and fire protection, reduces insurance rates, gives clean cistern water,

is suitable for any building, new or old in fact, has every desirable quality.

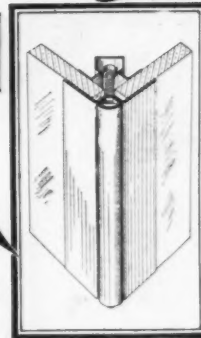
When you offer customers such an **IDEAL** roofing material—at a reasonable, yet profitable price—is it not a dead certainty that you will secure plenty of contracts and that within a short time you will establish a profitable, growing Slate Roofing Business? One that can be carried in connection with your present line with no added trouble or expense.

Investigate our proposition. Take up Slate Roofing. Write to us at once for delivered prices on slate, free book of instruction, prices on the few simple tools required. **DON'T DELAY. WRITE TODAY.**

AMERICAN SEA GREEN SLATE CO.

Box 36, Granville, N. Y.

Abundant Light on a good Corner



When a company operating stores in all the principal cities of the U. S. in quest of the best **Corner Bar and Store Front Construction** on the market—best from the **Architect's** point of view—best from the **Merchant's** point of view—selects a certain **system**, it is very evident that merit alone was considered and the selection made only after a very careful investigation. The

Kawneer System



of Store Fronts was selected and after several years of service it is installed whenever and wherever a thoroughly meritorious and business-pulling store front is required. Don't you think this is very good proof of its **Superiority**. Think it over. If you are not fully informed, may we enlighten you? Write our nearest office. It will mean just as much to you as to others.

Ask for Price
List B

It stays and pays

KAWNEER MFG. CO.

HOME OFFICE, NILES, MICHIGAN

BRANCH OFFICES

Chicago
St. Louis
Pittsburgh
Spokane
London, Ont.
Denver

New York
Portland
Atlanta
Lincoln, Neb.
Sioux City, Ia.
Vancouver, B. C.

Kansas City
Detroit
Cincinnati
Syracuse, N. Y.
Houston
Seattle



Officers and Sales Organization of the Berger Manufacturing Company

1. Ed. A. Langenbach, president and general manager.
2. Fred H. Snyder, first vice-president.
3. R. H. Yancey, second vice-president and manager ceiling department.
4. Chas. A. Irwin, secretary and general superintendent.
5. F. A. Schwertner, treasurer and manager lantern department.
6. Chas. W. Krieg, assistant treasurer and auditor.

Sales Organization

7. A. T. Enlow, manager of sales.
8. Geo. J. Smith, manager roofing department.
9. H. O. Wilson, assistant manager ceiling department.
10. H. G. Geltz, manager pump department.

Fireproofing Department

11. Manager, W. L. Caldwell, metal studs and lath.
12. C. R. Jamison, vault lights, Ferro-Lithic and Multiplex.
13. H. M. Naugle, metal lumber.
14. Theo. Hiller, manager furniture department.
15. H. L. McKenzie, manager jobbing and tin plate departments.
16. A. E. Hockwalt, manager credit department.
17. W. W. Wallace, manager advertising department.

Branch Organization

18. Wm. S. Langenbach, manager of branches.
19. E. H. Fickinger,
20. Geo. D. Glass, branch managers, New York.
21. John G. Lorenz,
22. Al. Langenbach, branch managers, Philadelphia.
23. Ray T. Langenbach,
24. James T. Glover, branch managers, Boston.
25. C. M. Kennedy,
26. N. V. Lux, branch managers, Minneapolis.
27. H. L. Sosenheimer, branch manager, St. Louis.

28. J. C. Barton,
29. C. N. Thompson, branch managers, San Francisco.
30. J. H. Schlafly, senior employe and factory superintendent.

Salesmen

- | | |
|--------------------------|------------------------|
| 31. Geo. W. Andrew, | 58. Arthur W. Kimball, |
| 32. Emil E. Baechel, | 59. W. J. Leas, |
| 33. Geo. E. Barnes, | 60. F. C. Lomas, |
| 34. R. A. Bartholomew, | 61. John Maher, |
| 35. Geo. A. Belding, | 62. J. G. Marxen, |
| 36. H. A. Berger, | 63. L. D. Mercer, |
| 37. Harry G. Bow, | 64. A. H. Meyer, |
| 38. K. M. Boyd, | 65. G. O. Meyer, |
| 39. Geo. H. Bresee, | 66. W. J. Myers, |
| 40. T. D. Callahan, | 67. F. A. Northrop, |
| 41. C. C. Chase, Jr. | 68. F. X. Quinlin, |
| 42. R. C. Combs, | 69. C. A. Resch, |
| 43. J. H. Deering, | 70. H. P. Resch, |
| 44. C. M. Easterly, | 71. Geo. F. Schafer, |
| 45. F. M. English, | 72. H. A. Seeger, |
| 46. B. A. Epperson, | 73. J. A. Shaunty, |
| 47. J. A. Epps, | 74. E. H. Shaw, |
| 48. W. H. Fricke, | 75. I. Jay Shults, |
| 49. H. E. Garner, | 76. C. E. Stevens, |
| 50. Frank Gerold, | 77. C. E. Stevenson, |
| 51. P. H. Gramer, | 78. C. M. Stucker, |
| 52. L. N. Grove, | 79. J. A. Teckenbrock, |
| 53. John D. Higgins, | 80. S. D. Valentine, |
| 54. C. E. Hillman, | 81. A. T. Voegtler, |
| 55. Walter Jackson, | 82. J. A. Willis, |
| 56. Arthur J. Judge, Jr. | 83. Will Wright, |
| 57. Geo. H. Kelly, | 84. A. E. Yarnall. |

The F. E. Meyers and Bro. Calendar

We take pleasure in publicly acknowledging receipt from F. E. Meyers and Bro., Ashland, Ohio, of a calendar poster

LUMBER AND BUILDING MATERIAL

Special Offer To Contractors And Builders

Buy From Us At **WRECKING PRICES** **CHICAGO HOUSE WRECKING CO.** An Opportunity To Save **25 TO 50 PER CENT**

IMPORTANT! Send Us Your Lumber and Building List for Our Estimate

Brand New Lumber for Sale

The Chicago House Wrecking Company is the largest concern on earth devoted to the sale of Building Material and General Supplies direct to the Carpenter and the Contractor. By dealing with us you are purchasing at first hands. This company was organized in 1893 for the purpose of dismantling the Columbian Exposition at Chicago. Since that time we have successfully purchased and dismantled every Exposition of any note. We have from this one source alone sold over One Hundred and Sixty-five Million feet of lumber. It was from this natural cause that we engaged in the lumber business. We found that it was impossible for us to successfully take care of the thousands of our customers who supply them with lumber from this one source. As a consequence we purchased outright various saw mills and also bought at forced sales millions of feet of high grade, brand new lumber. In addition we have for sale a complete stock of mill work, plumbing material, heating apparatus, structural iron work and everything that enters into the construction of a building of any kind or for any purpose. Our fame is National. No other firm can make the sweeping statement that we do: That you can come into our establishment and buy everything needed both to build the building and completely equip it. We invite inspection of our stock.

Fifty Million Feet In Stock

At the present time, we have for quick sale over fifty million feet of brand new, first class, high grade lumber of every kind. We can furnish you lumber for building houses, churches, barns, stores and factories. And it is the best grade of lumber. Just as good lumber as is to be found anywhere on earth. We are making special prices to those who buy at once. Never in years has lumber been offered at such prices as we offer it. The best proof of this is to allow us to make a bid on your estimates. Just make a complete list of everything you need for any particular job you may have on hand and it will surprise you what we can do in the way of prices. Nothing like it was ever heard of. The best and most convincing proof of our prices is the fact that during the past sixty days while others have been bewailing poor business, we have steadily increased and have sold vast quantities of lumber and building material. Much more in fact than we have ever sold in any corresponding period in the history of this business. You will save in dealing with us. Our broad and binding guarantee protects you absolutely. You will get from us just the material that you purchase. It stands to reason that our goods must be right. How else could our business have attained its wonderful commercial proportion? All we ask is an opportunity to convince you. Or, better yet, come on to Chicago, visit our yards, see our goods. We will show you it all that we represent. Then and there we will make you a price so low that it is bound to secure your business. You can't overlook such a chance as we offer. It is the opportunity of a lifetime. You will never again be able to purchase lumber and building material at such low prices as we offer today. Write for particulars.

Satisfaction Guaranteed.

We guarantee absolute satisfaction. We mean every word of that. We want your business only on a square business-like basis. We will deal honestly and fairly with you. If you buy any material not fully up to our description, we will either refund the purchase price or exchange it for correct material. This company has a capital stock and surplus of over One Million Dollars. We refer you to any Bank or Banker anywhere. Write to any commercial agency or ask us for names of people who have bought their lumber from us recently and we will send you copies of hundreds of letters received by us daily. Our best advertisement is the vast number of satisfied customers. **Write Today For Our Low Lumber Prices** Ask us to send you our latest lumber price list. It will be sent you so clearly and plainly that you can tell at a glance just what our quotations are. The grades are clearly defined. No attempt to humbug you on quality. We want to furnish you just what you buy. We want you to be able to say you "buy your lumber and building material from us and get value for your investment." That's the way we built up this business. That's the way we intend to continue to build. We require your patronage and good will. Out-line your needs and we will make you a reply so convincing and clear that you can't help but give us the business.

Everything Used In Building Sold At A Big Reduction

BARGAINS IN DOORS

5000 4-panel Doors 1 3/8-in. thick, size 2 ft. 6 in. x 6 ft. 6 in. 95c each. Size 2 ft. 8 in. x 6 ft. 8 in. \$1.05 each. We carry a complete stock of brand new doors of all sizes and in every specification. Handsome high grade front and vestibule Doors, strictly "A" quality and the best of their respective kind. They are set with bevel plate glass, or we can furnish them glazed with fancy lace design, double strength glass. They range in price from \$3.75 to \$20.00. High grade Front Doors, brand new, strictly "A" quality White Pine, glazed with sand blast glass size 2 ft. 6 in. x 6 ft. 6 in. \$3.15. Other sizes at proportionate prices. California Redwood Sash Doors strictly first class glazed with clear glass, 2 ft. 6 in. x 6 ft. 6 in. \$2.50. 2 ft. 8 in. x 6 ft. 8 in. \$2.60. Double Sash Doors for stores or vestibule strictly "A" quality White Pine, 1 3/4-in. thick, glazed, size 2 ft. x 7 ft. with double strength glass \$9.00. All sizes in stock up to 6 ft. x 8 ft. Brand new 5 cross panel O.G. Doors with panels raised both sides, size 2 ft. 6 in. x 6 ft. 6 in., \$2.07. Size 3 ft. x 7 ft. 6 in. \$3.00. A complete stock of all sizes. Four Panel O.G. Doors White Pine size 2 ft. x 6 ft. \$1.22. 10,000 Used Doors from various wrecking operations. In this lot we have doors taken from small cottages and buildings ranging from 2 ft. x 6 ft. up to 4 ft. x 8 ft. in good condition at 40c. Also fancy glazed Front Doors for residences ranging in various sizes at \$1.50, and up. One lot of large barn doors used at the St. Louis Exposition, fancy designs, strongly built, each \$2.00. Write at once for full particulars.

HIGH GRADE NEW MILL WORK

We are in better shape to quote low prices than any other concern on earth. We do not buy our goods in the regular way. We purchase at Sheriffs' Sales, Receivers' Sales and Manufacturers' Sales. We can furnish you mill work of every kind and character. We can furnish everything needed in mill work, both regular and special. Send us memorandum of your requirements. Let us make you an estimate. Note our low quotations: Colonial Porch Columns strictly No. 1 Poplar, trimmed, sizes 6 in. x 6 in., 4 ft. long at \$1.25; 8 in. x 8 in., 4 ft. long at \$1.45. 6 in. x 6 in., 8 ft. long at \$1.70. 8 in. x 8 in., 10 ft. long at \$2.70. Fancy Porch Columns sizes 4 in. x 4 in., 8 ft. long at 65c; 6 in. x 6 in., 9 ft. long at \$1.15. 6 in. x 6 in., 10 ft. long at \$1.80. Fancy Porch Columns 4 in. x 4 in., 4 ft. long at \$1.25; 8 in. x 8 in., 4 ft. long at \$1.45. 6 in. x 6 in., 8 ft. long at \$1.70. 8 in. x 8 in., 10 ft. long at \$2.70. 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Johnson's Wood Dye and Electric Solvo?

THOUSANDS of painters, like the one in the picture, already *know* Johnson's Wood Dye.

They know what beautiful and permanent effects it makes possible.

They know that, instead of merely coating the surface, Johnson's Wood Dye enters into the grain of the wood, bringing out the natural beauty, preventing any possibility of its "showing white," if scratched or marred. Will not show laps. Goes farther, too, and is most easily applied.

Johnson's Wood Dye comes in 15 standard shades:


No. 126 Light Oak	No. 130 Weathered Oak
No. 123 Dark Oak	No. 131 Brown Weathered Oak
No. 125 Mission Oak	No. 132 Green Weathered Oak
No. 140 Manilla Oak	No. 121 Moss Green
No. 110 Bog Oak	No. 122 Forest Green
No. 128 Light Mahogany	No. 172 Flemish Oak
No. 129 Dark Mahogany	No. 178 Brown Flemish Oak
	No. 180 Silver Gray

Any combination may be obtained by mixing two or more shades. To lighten, add wood alcohol. To make shade darker, add Flemish Oak No. 172.

Half-gallons, \$1.50; quarts, 85c; pints, 50c; half-pints, 30c.

It's easy to remove old finishes without harm to the wood—use Johnson's Electric Solvo; then refinish with Johnson's Wood Dye in the usual way.

Gallon cans, \$2.50; quart cans, 75c; pint cans, 40c.

We want you to have Free Samples of **Johnson's Wood Dye** and **Johnson's Electric Solvo**. See across the page 

S. C. Johnson & Son
Racine, Wis.

"The Wood Finishing Authorities"



for 1909—one of the most artistic and effectual that we have seen. We understand that it is being mailed direct to 30,000 building material and equipment dealers.

The body illustrates numerous patented and proven new articles, such as up-to-date water-lifters, implements for unloading hay and grain from the load into the mow or onto a rick, pulleys, pumps, easy and reliable doorways, and many other everyday requirements for the building contractor the year round. The poster shows at a glance the complete and varied line of supplies available from this reliable company.

Good Business

The Ashland Steel Range and Manufacturing Company, of Ashland, Ohio, manufacturers of the well-known U. S. Standard cement building block machine and concrete mixer, state that in the way of actual sales made, as well as in securing prospective sales, the Cleveland convention was by far the most profitable they have ever attended. This is probably due in part to the fact that the character of their machines is being constantly improved.

A New Mixer

The Miles Manufacturing Company, of Jackson, Mich., pioneers in the block machinery business, advise that they will have an "eye opener" in their new Miles Cyclone concrete mixer that will be displayed at the Cleveland convention January 11th to 16th, and at the Chicago show February 18th to 24th.

It is a well known fact that there is room for improvement in this, as well as other branches of the concrete machinery business. The manufacturers of the "Cyclone" say they have taken a longer stride towards a perfect mixer than any others. With the long experience of the Miles Manufacturing Company they should understand fully just what is

required, and a thorough investigation should be given this proposition.

They have developed the vertical principle of mixing. The machine is of the continuous type but requires about one-half the power to operate it that is necessary for other mixers, either batch or continuous.

The materials enter at the top of an upright drum through a positive proportioner. They are given a thoroughly dry mix by a system of hoppers rigidly attached to the outer casing and a set of disks attached to a shaft hung vertically to the center of the drum, and which revolves at a high rate of speed. The materials are spread evenly by the disks onto the hoppers, and by the latter they are conveyed to the center of another disk below.

After the materials are given a good dry mix, they enter into a trough where water in any quantity desired is admitted, then they are thoroughly mixed again and at the same time conveyed from under the machine to a proper height for a wheelbarrow.

The machine is compact, built low, and the hoppers are at a very convenient height. It is simple in construction, portable, easily cleaned, and will handle any kind of material satisfactorily. The price is right.

Investigate this outfit if you are in the market. Complete literature will be furnished to prospective buyers upon request. Look it over at the coming shows.

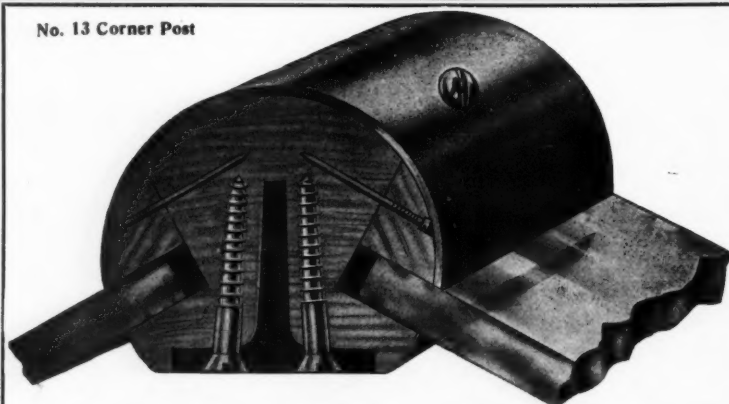
It's Free

The Cortright Metal Shingle Advocate is brimming full of good things every month—practical information in regard to roofing questions, breezy notes and comments, fine illustrations. Here's a sample from the January number:

Look around town for the most substantial dealer in roofing or the best practical roofer—and there you'll see signs of Cortright metal shingles.

(Continued page 558)

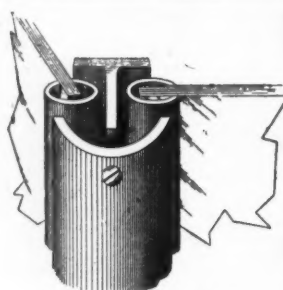
No. 13 Corner Post



THE COULSON Patent Store Front Construction

There are many ways in which the stores of today are more complete and convenient than in the past. This is not only noticeable in the work of the architects, but by the application of many of the new inventions. One of the most noticeable features being the use of light construction for the store fronts, doing away with heavy columns and pilasters and large, cumbersome wood posts which obstruct the light and makes it almost impossible for the merchant to display his goods. About eight years ago the Coulson Patent Store Front Construction was placed on the market, and its merits have surpassed any other device for supporting large plate glass, and for the convenience of setting, at the same time covering all difficulties experienced by the use of other devices, that it has met with universal success, wherever introduced. If you are contemplating building or re-modeling store fronts, write for one of our latest catalogues "D800."

J. W. COULSON & CO., Sole Owners and Manufacturers
Main Office, 234 N. Third St. COLUMBUS, O.



The Universal Sash Bar

Makes any angle, allows for setting of building, keeps windows from frosting.

Standard Store Front Construction of the World

Glass set from the outside.

Write for latest catalogue

Voltz Manufacturing Co.

1101-1103 S. 8th St.

St. Joseph, Mo.

On the Square



every builder should have my little works and be a constant reader of the "Cement World," the leading paper of its kind published.



STEEL SQUARE POCKET BOOK.....	\$.50
FOLDER (in case with pockets).....	.25
DESIGNING (finely illustrated).....	.50
CEMENT WORLD	1.00

All for \$1.75. **DWIGHT L. STODDARD**, Author of "Steel Square Pocket Book," 328 W. Raymond St., Indianapolis, Ind.
Send for other Combination Offers.

The Sun Never Sets on **VULCANITE** *Roofing*



When You Experiment With
Experimental Roofings
You Lose. Buy a Roofing
With A Reputation

VULCANITE
Has Stood the Time
Test for Sixty Years

Vulcanite was first made in Europe sixty
years ago and is the most extensively
used roofing in the world today.



Why Vulcanite Excels

Because it is the best ready roofing in existence, it has been awarded Gold medals and highest honors at many Expositions. The same high standard of quality is maintained—and even increased.

Not cheapest at first cost, but cheapest in the end. "The Roofing of Ultimate Saving."

Vulcanite is a mineral rubber compound and is the highest priced material used in the manufacture of any ready roofing, but it pays us to use it because the quality is there.

An Honest Roofing

Following the unusual material is the exceptional manufacturing process. Vulcanite is subjected to enormous pressure which renders it very dense and firm, yet pliable and as tough as leather.

All the felt used for Vulcanite roofing is pure wool. No paper or other cheap filler is used. We manufacture it ourselves at our extensive mills in Franklin, Ohio, and therefore know what goes into it.

From start to finish it's an honest roofing.

Our Guarantees

Vulcanite Roofing will not freeze or crack in winter, will not crumble in dry weather—will absolutely refuse to leak in wet weather. Backed by a responsible company, our liberal guarantees are always valid.

To dealers who sell it—to contractors who lay it—to owners who buy it, Vulcanite is absolutely guaranteed to wear for a great number of years.

It's the positive protection against an inferior roofing. If there's any loss it will be ours.



**Mail this Coupon
Today**
Patent Vulcanite Roofing Co.
Chicago

Franklin, Warren Co. • Ohio

VULCANITE Free Samples and Information

Fill out this coupon and receive Free Samples and booklet of roof information.

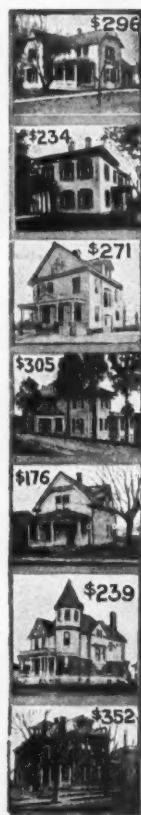
Patent Vulcanite Roofing Co., Chicago

Name

Address

City.....State.....

ANDREWS HOT-WATER



Profit for the Contractor-Cut-to-fit
THIS HOUSE → **\$215** **SOLD ON 360 DAYS**
 Was Hot Water Heated for Everything complete. Look at the picture

Why don't you equip that house or building you are working on with the Andrews Systems—hot water, steam or hot air Heating, Plumbing, air pressure Water Supply and Sewerage Disposal? Other contractors are using the Andrews Systems, taking the general contract complete, including all these items. You can make the margin that otherwise would go to several small contractors.

Our plants have the pipe cut to fit and all ready to be screwed together. All the other work consists of cutting holes for the pipes through the floors and ceilings, which is really carpenter's work, and your man can make a neater looking job of it than a plumber. With the plans and directions we send you cannot make a mistake. Send us plans or a sketch of the building and we will submit a *net price to you*, or send a price direct to your customer, including a commission for you, as preferred. Any of your carpenters can erect the different plants; the work is not as difficult as building a stair. We will send you free the only extra tool you will need—a pipe wrench. You might as well make \$50.00 to \$200.00 more on your contracts.

All our plants are covered by a 360 Day Free Trial Guaranty Bond to give your customer perfect satisfaction. Send us plans and let us submit an estimate.

HOT WATER

Beats every other method of heating, because it costs less to install, less to operate, less to keep in repair, and much less for fuel; keeps the house clean, and comfortable in every room. Stoves and furnaces burn and rust out and while the hot water heating plant will last as long as the recognized as the ideal heat. Cost alone has stood in the way of our wholesale factory production by which are turned out at minimum cost, every home can have a hot water heating plant. Finished (or old) houses can be fitted with the walls.

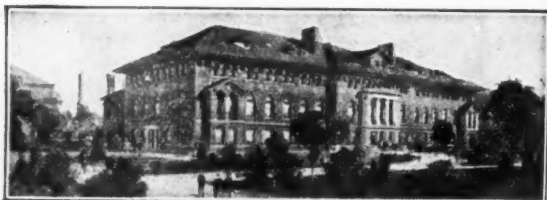


Andrews \$120 Plumbing

This Plumbing Equipment shown in this house is economical, durable and conforms with the latest sanitary engineering practice. It gives quality and durability at the minimum cost. Interior articles lead inevitably to costly repairs.

The Material includes white porcelain enamel bath tub, 4½ ft. long with roll rim, nickel plated trimmings; porcelain water closet, low down golden oak tank, seat and lid, nickel-plated trimmings; white porcelain enamel lavatory, white porcelain enamel kitchen sink complete; 30-gallon galvanized kitchen range boiler and stand; granite laundry tray; vent and waste pipe, including cast iron soil pipe, galvanized and black pipe, traps, bends, lead, oakum and all material to erect outfit complete. There are no joints to wipe. Our plans and directions are complete so that any handy man can do the work. Where there is a city ordinance, all material will be arranged to conform.

Clarence H. Jhonston FOLWELL HALL J. & W. A. Elliot
 Architect University of Minn. Contractors



THE MATERIAL

at the above price includes: Andrews Vertical Steel Boiler; complete outfit of richly ornamented radiators; best steel pipe; expansion tank; Andrews Regulating Safety Valve; all the necessary fittings, fire cement, gold (or silver) bronze, and brush; also clinker hook, shaker and flue brush, everything complete, all as shown in this house.

SPECIAL PLANS

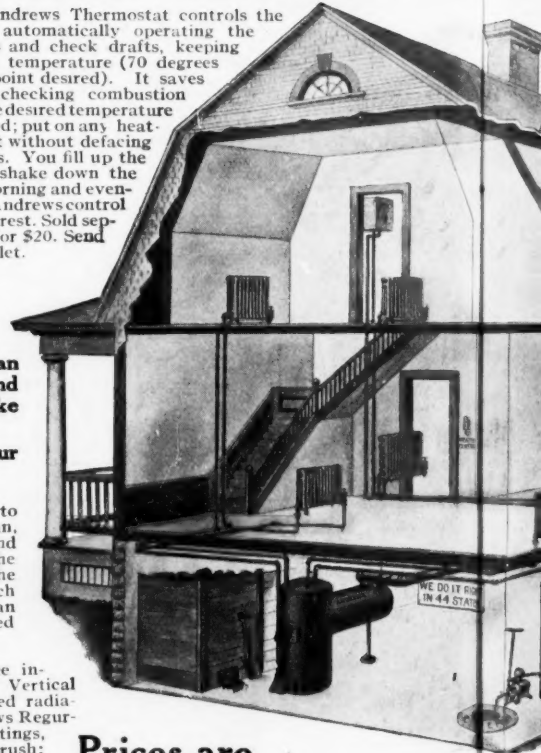
and exact estimates of cost are made for each individual job. Send us today the plan of your house, or rough sketch with measurements, and we will submit an exact estimate of cost delivered to your city, also an estimate of what it should cost you for installing the plant, if you employ labor for that work.

Special prices on estimates submitted at once, but the contract must be closed within 30 days thereafter. Delivery may be later.

The ANDREWS STEEL BOILER

burns any fuel with great economy. On account of the extra large heating surface it gives the same heat with a third to a half less fuel. All boilers are made from 60,000-lb. tensile strength steel, the same as steam power boilers. We also manufacture steam heating boilers, where special conditions require steam heating. Our boiler have a rocking-and-dumping grate, which is easily operated and gives good results with different fuels.

The Andrews Thermostat controls the fire by automatically operating the dampers and check drafts, keeping an even temperature (70 degrees or any point desired). It saves fuel by checking combustion when the desired temperature is reached; put on any heating plant without defacing the walls. You fill up the fire and shake down the ashes morning and evening, the Andrews control does the rest. Sold separately for \$20. Send for booklet.



Prices are

for all Material — no extra

ANDREWS SYSTEMS — Heating,

plenty of hot water for domestic use

Plumbing—Water Supply—Sewage Disposal

—Prices we quote includes everything

the little things. (It is the little things

make the house cost more than a boiler

equal size.) We make no charge for

result of our 25 years' experience in

facilities for getting the raw materials

We sell anything in the heating

plant—doing it right in 44 States,

SEND FOR OUR 72 PAGE

or Hot Air Systems) PLUMBING

ADDRESS NEAREST OFFICE

1063

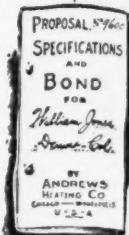


HEATING SYSTEMS

it jobs that any mechanic can erect.

FREE TRIAL

OUR BOND Such confidence have we in all the Andrews systems and our method of doing business that we give a bond that is legally binding upon us to repay to you the purchase price of the plant upon its return. All you need say is that you are not satisfied and want your money back. No other heating concern in America has ever matched this offer.



bundles, boxed, ready to screw together; with full instructions for erecting. The radiators (70 per cent of the weight) are shipped from the nearest distributing point. We pay the freight. Our new factory (illustrated below) has unequalled facilities for the manufacture of the Andrews Systems. Our Boiler Factory has a large equipment of special tools, such as punches, riveters, shears, flangers, hoists and jigs designed by our engineers. In each department, under highly skilled mechanics, the work is so systematized that the usual labor cost is fully cut in half.

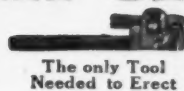
ANDREWS SANITARY SEWERAGE DISPOSAL This System overcomes the main drawback to living in the suburbs or out in the country. A cesspool is no longer countenanced by modern sanitary standards. The Andrews Sanitary Steel Septic System requires practically no attention and is suitable for residences, factories, schools, etc., that have no sewage systems. Sewage is harmful because it consists largely of decaying organic substances. The problem is to change this organic to inorganic matter very rapidly. This is effected in this system by the action of two classes of bacteria which in the process also destroy themselves.

The Andrews' Septic Tank Set is built of 60,000-pound tensile strength boiler steel. It is riveted and calked by machinery and made air and water tight; fitted with trapped inflow and automatic outflow; and large manholes with cover-plates. This tank set is built in a variety of sizes. Estimates free.

ANDREWS WATER SUPPLY

takes the place of city water, and makes possible all the comfort of a city home in suburbs or country. It also

furnishes fire protection, which reduces insurance rates. The Material includes one 325-gallon tank, built of 60,000-pound tensile strength boiler steel, tested to an air pressure of 100 pounds; a double acting air-and-water, brass-lined force pump, with all trimmings, including water and pressure gauges, pipe and fittings to connect pump and tank, with complete plans and details for erection. All pipe is cut to fit. Estimates free.



The only Tool Needed to Erect



Andrews Steel Boilers, Andrews Water Supply and Andrews

no extras

Heating, (with domestic uses)—Sewage Disposal—everything—all the little things that

charge for the engineering knowledge put into your plans and suggestions—a experience in heating, water supply and sanitary engineering, and unexcelled materials at the right price. Write today.

the heating line from a piece of pipe to a complete central heating 44 Sates, Canada and Alaska—We will do it right for you.

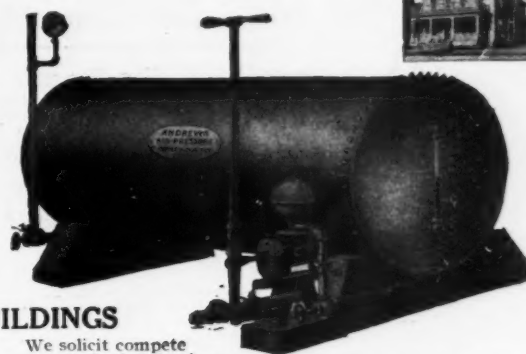
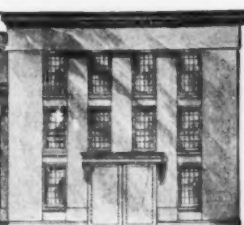
2 PAGE BOOK (300 ILLUSTRATIONS) ON HEATING (by Hot-water, Steam) PLUMBING, WATER SUPPLY, SEWAGE DISPOSAL

1063 MARINE BUILDING, CHICAGO

1063 HEATING BUILDING, MINNEAPOLIS

ANDREWS HEATING CO.

FACTORY, BIGGEST IN THE WORLD



LARGE BUILDINGS

We solicit compete contracts for heating large buildings. We design, manufacture and erect. We have a large force of reliable mechanics whom we send everywhere to install high pressure or vacuum steam heating, hot blast ventilating, large hot water forced circulation plants, etc.

Clarence H. Johnston Architect FARM SCHOOL Hamline, Minn. Newman & Hoy Contractors



**I never saw
a saw, saw
the way this
saw, saws.**



From tip to handle the Simonds Saw shows the result of utmost care.

The very fit of the handle is exactly right to give a perfect grip with an easy "balance" and just the right "hang."

The steel from which the saw is made is the famous *Simonds steel*, made expressly for and used only in the Simonds Saw.

Its temper is as nearly perfect as human thought has yet achieved. Tempered by our own secret process it holds a keen cutting edge in a marvelous manner, requiring but little attention or sharpening.

When you buy the Simonds Saw you are getting the highest grade saw made.

Thousands of experienced carpenters testify that

SIMONDS SAWS ARE THE BEST

And They ARE The Best

Protect yourself against imposition in buying saws by looking for Simonds trade mark. Whatever saw you find that on you are safe in buying, and *don't buy any other* unless you are prepared to be disappointed.

If your dealer does not keep the Simonds, let us know and we will see that you are supplied.

**SEND FOR "SIMONDS CARPENTER GUIDE"
MAILED FREE**

This booklet will tell you about Simonds Saws and give other information of real interest and value.

SIMONDS MANUFACTURING CO.

Fitchburg, Mass.

Branches in leading cities

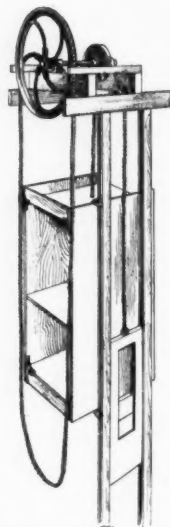
(Continued from page 546)

Hasn't man enough troubles without going up on the roof after them? Think of the ease of mind the next generation may have if you put on Cortright metal shingles now.

We do not make the price of Cortright metal shingles a few cents higher just to get the few cents—but because it is worth a few cents more than any other roofing and costs a few cents more to make. To those who have bought Cortright, that few cents is a dividend-earner compared to which Standard Oil stock is but a faint shadow.

The Cortright Metal Shingle Advocate is already being mailed to 35,000 builders each month. Does it come to you? It ought to. And it's free.

A Complete Self-Retaining Dumb Waiter



The accompanying cut shows the new self-retaining dumb waiter, made to travel from cellar to second floor, which is being put on the market by the R. M. Rodgers Company, of Brooklyn, N. Y. The manufacturers of this dumb waiter claim to have eliminated all complications peculiar to this class of construction so that this dumb waiter can be erected by anyone following the directions furnished. The car is of seasoned hard wood, shipped knocked down. The sides are dadoed to take top and bottom; shelf cleats are fastened in place and shelf is ready to hinge. These waiters will fit any ordinary size opening and can be shipped, ready to put in place, to any part of the country. A large variety of elevators, sidewalk hoists, hatch doors and invalid lifts is manufactured by the R. M. Rodgers Company, and descriptive matter will be sent to

anyone writing for same and mentioning this paper.

Durable Guaranteed Plane Irons

The Gage Tool Company, of Vineland, N. J., are producing not only a wonderfully fine tool in their self-setting plane, but succeed in giving remarkable cutting qualities and durability to their plane irons under the most severe test conditions. They have such confidence in their plane irons that they send them on a thirty days' guarantee, and replace any poor iron returned them by mail within thirty days of its receipt from their factory. This self-setting plane is a revelation to any mechanic.

A Valuable Book Free

Most carpenters probably have Simonds' Guide tucked away in their tool chest and probably find it one of the most convenient things in the outfit.

Those who have not accepted Simonds' offer to send the book free should get busy at once and do so; the AMERICAN CARPENTER AND BUILDER recommends it.

It is very small and well bound, with no waste space, for even a description of their Simonds' saw is well worth reading frequently. The reference pages will help a man out many a time when the memory has a tendency to go back on him at a critical time. For instance, examples on roof framing and stairs are briefly illustrated and the rules for same are laid down accurately. The suggestions for sharpening and care of tools may give ideas that are better than those already in use.

In the painters' department there are rules for staining wood, gilding both steel and wood, making putty, formulas for making wood petrifying preparation, fire cement, etc. The book tells you the weight of all kinds of lumber, how

Hurry Up Your Orders

LAST OPPORTUNITY

To Get Books at Reduced Prices



All Bargain Offers Made in the
January Clearance Sale Advertised
in the January Number of the
American Carpenter and Builder

Will Positively Be Withdrawn

February 15th, 1909

No Orders Will Be Filled at Prices Quoted
After Above Date



AMERICAN CARPENTER AND BUILDER
185 JACKSON BOULEVARD, CHICAGO

to find capacities of cisterns and wells, the number of nails and tacks per pound of the various sizes, the measure of oils of various kinds, the crushing strength and breaking weight of the various woods, number of bricks required in walls of various thicknesses, how many shingles required for given space and all sorts of tables of weight, measure, etc. The medical hints are not the least valuable of the little book's contents and will help give first aid to the injured in almost any kind of an accident.

If you want the book address Simonds Manufacturing Company, Fitchburg, Mass.

Porcelite in Use

When Keith's million-dollar theater in Philadelphia, Pa., was built it was a problem how to keep the halls, walls and ceilings in the immaculate condition demanded by the management and patrons of this superb play house. Very few people realize how large a part of the modern theater is back of the stage. There are dressing rooms innumerable, wash rooms, store rooms, etc., and halls connecting the same. The question of keeping these various apartments absolutely clean at a minimum expense was solved when the management went to the expense of finishing the first three floors, which are occupied by the theater proper in enamel. Not only are the halls and rooms lighter on account of the reflected light, but it is very economical, as the same can be wiped down when they become marked, bringing the surface back to its original finish without in any way impairing the gloss.

This work was done about three years ago, and a visitor today would think that this portion of the building had just been painted.

The management of Keith's theater state that while the

initial cost was higher than if ordinary paint had been used, yet at the present time, they have not only saved money, but so far their house has been in beautiful condition.

We are glad to advise our readers that the enamel used was the product of The Thomson Wood Finishing Company, of Philadelphia, Pa., and the enamel in question was their well-known Porcelite, which has also been used in some of the largest hotels and hospitals of this country, such as the Presbyterian Hospital of New York City, the Massachusetts Homeopathic Hospital, of Boston, Mass., the New Tuberculosis Hospital in Chicago, the Waldorf-Astoria and the Bellevue-Stratford. They will be glad to respond to any inquiries as to the best and most economical methods of finishing interiors for apartments of buildings. As the goods have been thoroughly tested, we can unhesitatingly recommend the same.

Henderson's Level

Henderson's straight-edge level is being placed on the market by Henderson & Co., of Memphis, Tenn. This level is the best level on the market for the various uses to which this level is applied. The level is destined to be fastened to a straight-edge of any desired length, making the straight-edge practically a level itself, doing away with having to carry two tools around when one will answer the purpose.

One end of the bulb holder is riveted to the frame, while the other end is slotted and works either up or down between two jamb nuts,



Asbestos "Century" Shingle Roof—McClure Terrace, Calumet, Mich.; Paul Humphrey McNeil, Calumet, Architect; Edward Ulseth, Calumet, Contractor.

Asbestos "Century" Shingles

"The Roof that Outlives the Building"

What roofing shall the architect or builder recommend to his client?

Tin, that rusts if not painted—

Slate, that chips, splits at the nail-holes and breaks—

Shingles, that rot and mould, and invite fire disaster—

Tiles, that absorb moisture, and rot roof timbers—or—

Asbestos "Century" Shingles—dense and elastic shingle-like sheets of asbestos fibre cement, formed and compacted under hydraulic pressure. They cannot rot, flake or split. Fire cannot burn them or break through them. The tramping of linemen will not break them. They outlive the building, and need no painting or repairs. Three colors—Newport Gray (silver gray), Slate (blue black), and Indian Red—numerous shapes and several sizes.

Ask your Roofer for new quotations. Write for Booklet "Roofing 1908."

The Keasbey & Mattison Company, Factors
Ambler, Pennsylvania

Get a **FOX TRIMMER** for INTERIOR FINISH

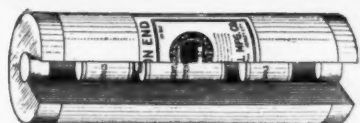
It's expensive business to have a high priced interior finisher whittling with a block plane, testing with a square or bevel protractor, and whittling some more, when **one stroke** with a Fox Trimmer is all that is needed.

We'll send our new Trimmer catalog on request

FOX MACHINE COMPANY

756-776 N. Front St.

GRAND RAPIDS, MICH.



Here's the Roofing You Ought to Use

Just as ready roofing has demonstrated its superiority over shingle, slate and tin roofs, so has MONARCH Asphalt Roofing conclusively proven its superiority over the usual ready roofing.

Genuine asphalt is acknowledged to be the most satisfactory roofing saturation and coating so far known. We use genuine Pitch Lake Trinidad Asphalt and all wool felt in the manufacture of MONARCH, and our method of applying the asphalt saturation, coating and mineral surfacing makes MONARCH a solid and perfectly combined whole—impervious to water and proof against flying fire-brands.

Know what you are buying—there is no substitute for genuine asphalt roofing. Send for Sample Set M-2.

Carpenters and Builders.—We know Monarch will justify our claims. You cannot find a better Roofing at any price. We earnestly desire you to give it a trial. If your dealer does not carry Monarch we will see that you are supplied direct.

Stowell Mfg. Co., Jersey City, N. J.

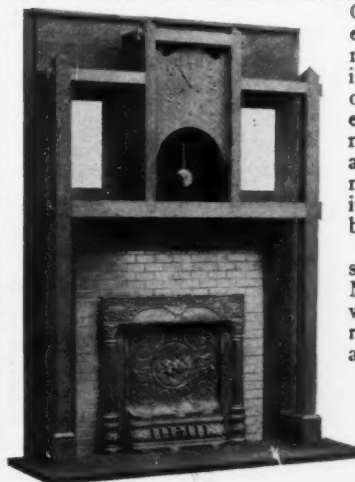
Philadelphia Chicago Kansas City

The Interior

of your home is where you live and derive the most comfort, and a well designed mantel contributes more to the interior appearance of the home and comfort of its occupant than any other article of furniture or decoration.

CENTRAL MANTELS

are distinctive in character, workmanship and finish. Twenty years' experience catering to the wants of the home builder enables us to know and meet their wants.



Our factory being equipped with all of the most modern labor saving devices and keeping on hand constantly an enormous stock of raw materials, places us in a position to sell better mantels cheaper than it is possible for you to buy elsewhere.

We can furnish any style from Colonial to Mission, and in any wood or finish at prices ranging from \$10.00 and up.

The above is one of the many designs shown in our 112 page catalog, which is the finest, most complete and expensive mantel catalog ever issued. Catalog sent free on request to Carpenters, Builders or anyone building a home.

CENTRAL MANTEL COMPANY

No. 1247 Olive Street - - - St. Louis, Mo.
"Reputation and Quality Count"

It's Worth While



to look into store front construction before specifying. If you will investigate, you will find the leading architects and builders are selecting the Petz system of metal store front construction, because of its great strength and durability, because of its artistic possibilities and because it gives the greatest possible amount of light and window display space.

It allows glass to be set from outside. You will understand why it gets the endorsement of the leading architects and builders, if you will send for our booklet "Modern Store Front Construction." It gives full description and illustration of our different bars. You will find our bars illustrated in Sweet's Index for 1908, on page 648.

Detroit Show Case Co.

Show Case Makers to Progressive Merchants.

491 West Fort Street

DETROIT, MICH.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



THE EDWARDS
"PERFECT"
HIP SHINGLES

Made in Tin, Galvanized Iron and Copper.
 Size 4x9 inches. Size 5x12 inches.
 Packed 100 in a box ready for shipping.

Can be Applied to Metal Shingle, Wood Shingle or Slate Roofs

Acknowledged the very best hip covering that can be used—far superior to the ordinary wood or metal rolls and the work of laying considerably less.

THE EDWARDS MANUFACTURING CO.
"THE SHEET METAL FOLKS"

401-417 Eggleston Ave.
 CINCINNATI
 U. S. A.




SEND
 FOR OUR
 CATALOG

STORE ELEVATORS
 \$75 TO \$95

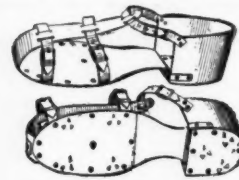
OTIS ELEVATOR COMPANY
 824 RAILWAY EXCHANGE
 CHICAGO

allowing you to adjust the level with ease and absolute accuracy. For convenience the makers furnish two thumb screws with each tool which are cone shape, and act as an adjustment when replacing the level, allowing you to remove the level as often as desired, with only the one adjustment.

It does not require a recess to apply the tool, as it can be applied to the face or back of the frame. It is claimed that better work can be obtained with one of these levels fastened to a straight-edge for setting frames, door jambs, partitions, leveling foundations, etc. It is equal to a builder's transit in results. Further information can be obtained by addressing Henderson & Co. Cut is two-thirds full size.

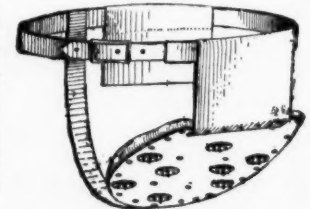
Valuable for Roof Workers

On another page in this issue can be seen the advertisement of the Coldwater Specialty Manufacturing Company, of Coldwater, Mich.

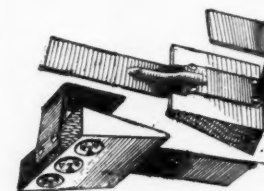


This ad. will be of interest to every carpenter who does shingle roofing whatsoever, or to anyone who does roof-climbing of any sort. Stowe's Shingling Kit, as their product is called, has been

on the market for the last two years, and wherever it has been tried nothing but the highest praise is given it. It consists of an anti-slipping sandal, an anti-slipping roofing saddle and a positive non-slipping roofing bracket. The sandals not only eliminate all danger of sliding from the roof, but also protect the shoes.



With these on a carpenter can walk up the side of a roof without any fear of slipping. They are made in three sizes, large, small or medium.



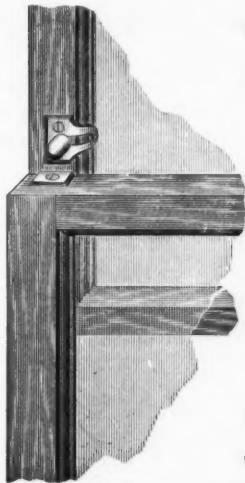
The brackets are for use in holding the 2 by 4 securely in position without the use of any nails whatsoever. They are easy to adjust, are instantly removed, and do not injure the shingle.

The anti-slipping roof saddle is not only a necessity to the roofer, but is also a luxury. It enables the operator to do more work, better work and quicker work, at the same time affording him a comfortable seat, and protecting his clothes. It is so arranged that the operator may shift from one hip to the other without adjusting. This is provided with a nail pocket. Further information will be gladly given. Write today to the Coldwater Specialty Manufacturing Company, Coldwater, Mich., for their special introductory offer, and in your letter mention the name of the leading hardware dealer in your city.

Carborundum Extensions

One of the many evidences of the return of prosperity is found in the fact that the Carborundum Company, manufacturers of the wonderful abrasive, Carborundum, is to increase its already extensive plant at Niagara Falls, with the addition of a four story brick and steel structure, and the consequent increasing of its output and working force.

The new building is to be 225 feet in length and 60 feet in width. One entire floor of the building is to be given over to the manufacture of Carborundum sharpening stones, hones, scythe stones and other specialties. The growth of this branch of the Carborundum business has been literally phenomenal, and now Carborundum sharpening stones can be found in almost every hardware store in the country.



Ventilation Without Risk

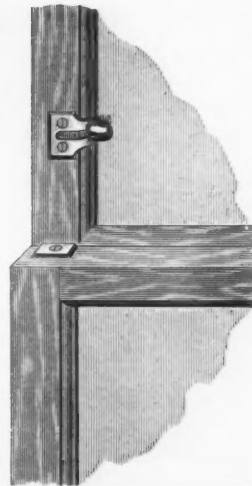
IVES PATENT VENTILATING LOCK

A safeguard for ventilating rooms, allowing windows to be left open at the top, the bottom, or both top and bottom with entire security against intrusion, a permanent fixture easily applied and quickly operated, affording three times more protection to the window than the ordinary sash fastener.

THE H. B. IVES COMPANY

NEW HAVEN, CONN., U. S. A.

88-page Catalogue Hardware Specialties mailed free



You're Losing Money Every Day You Wait

THE

Shrp-Shavr Safety Razor

At 25 Cents

is the quickest selling and biggest business-building proposition you've ever had a chance to get in on.



A complete Safety Razor, with a money back guarantee FOR 25

CENTS—an absolutely virgin field of customers to draw from—A CONTINUOUS SALE OF BLADES—a magnet that pulls a mass of new buyers into your store for shaving-soap, strops and all shaving accessories—and a clear profit of 50 per cent on every single one of the hundreds of razor sales—that's exactly what you're losing every day you delay in putting in a stock of Shrp-Shavr Razors.

We're spending thousands of dollars to create customers for you. Co-operate with us. Do your share and get your share. We're working tooth and nail for you in the magazines. Won't you take your part of the profits that are waiting for you?

Write your jobber, or if he will not supply you, order direct, and get your share of the Shrp-Shavr business.

PRICES

SHRP-SHAVER RAZOR with one blade, per dozen - - - \$2.00
SHRP-SHAVER BLADES, 5 in a pkg., per dozen pkgs. - - - 2.10
SHRP-SHAVER STROPPERS, per dozen - - - .75

SHRP-SHAVER RAZOR COMPANY

70 Duane St.

NEW YORK CITY

The Roof that Proves—Sun-proof and Rain-proof: Needs no Paint or Repairs



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The Pioneer Roll Paper Company are refiners of Asphalt and manufacturers of Asphalt Paint—which they supply direct from their factories in Los Angeles.

California Agents for North-western Compo-Board Company.

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FACTORY PRICES We furnish the highest grade bicycles, it is possible to make at one small profit above actual factory cost. You save \$10 to \$15 middlemen's profits by buying direct of us and have the manufacturer's guarantee behind your bicycle. **DO NOT BUY** a bicycle or a pair of tires from anyone at any price until you receive our catalogues and learn our unheard of factory prices and remarkable special offers to rider agents.

YOU WILL BE ASTONISHED when you receive our beautiful catalogue and study our superb models at the *wonderfully low prices* we can make for 1909. We sell the highest grade bicycles for less money than any other factory. We are **BICYCLE DEALERS**, you can sell our bicycles under your own name plate at double our prices. Orders filled the day received.

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MEAD CYCLE COMPANY

Dept. T. 122 CHICAGO, ILL.

During the past year the Carborundum Company has added several new lines to its manufactured products. These include garnet-paper and cloth, used largely in the wood and furniture trade, and emery paper and cloth, used in finishing metal and machinery parts. The addition of these lines and the development of the regular sharpening stone and grinding wheel business has made the addition to the plant necessary.

A Fire and Moisture Proof Wall

One of the most difficult things to provide for in the construction of a concrete residence or building of any kind is dampness. To overcome this manufacturers of concrete blocks have resorted to all manner of expedients, with more or less success. At the cement show in Cleveland last month, the Anchor Concrete Stone Company, of Rock Rapids, Iowa, demonstrated beyond question that they had



solved this problem. Their method is by molding two separate and distinct blocks, tying them firmly together in process of construction with four one-quarter inch galvanized iron rods eight inches long, and turned one inch at each end, leaving a continuous hollow air space, as shown in cut, from the basement to the roof. By this method the air is allowed to circulate freely between the walls, and absolutely insures a perfectly dry inner wall at all times. No furring strips or lath need be used, as a house constructed with the anchor blocks can be plastered directly on the inner wall. You can readily see what a great saving this will make in time, labor and expense.

They would be pleased to send you on request their catalogue, which is free for the asking.

The Soapurn

Chas. Morrill has brought out and placed upon the market a device called the Soapurn. This is a sanitary device for the storing and economical distribution of liquid soap. It consists of a strong glass urn supported by a bracket to either the washstand or wall, having a locked cover, and at its lower end a discharge valve made of non-corrosive metal.

The cover consists of a metal cap which locks into grooves in the glass. The opening is large so as to permit easy access to the inside of the glass vessel.

The lock is a very simple arrangement, having no springs. It cannot break or get out of order, and can only be operated by a special key.

The reservoir or urn is glass, and the valve parts are nickel alloys which will neither rust or corrode.

The valve is simple and positive and does not depend upon gravity for its action. It has only one moving part and cannot break or get out of order. The soap enters the upper part of the valve and when the piston is pushed up, runs down below it; then, as the pressure of the hand is released and the piston allowed to come back, it forces out into the hand

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Original Ideas in Mantels suitable for Bungalows, Cottages, Concrete or Cement Houses.

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We can save you money on
**Cornice, Skylights,
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Mention the American Carpenter and Builder.



a couple drops of soap. As it takes from five to ten drops for
an average wash, depending upon the condition of the hands,
it is necessary to operate the plunger several times in order
to get enough soap. It would be just as easy to so design the
valve as to get enough soap at one operation but it is a well
known fact that persons, particularly in public places, will
operate a device like this a number of times regardless of
how much they may get at one operation. So this device has
been purposely designed to throw only a small quantity
and so eliminate this waste. At no position of the plunger
will a steady stream flow. Most other containers throw from
ten to thirty drops at one operation, so that the great economy
of the Soapurn is readily understood.

The Soapurn is furnished in several styles of cover and
brackets. Each Soapurn is carefully packed in a cellular box
for shipment with full directions for setting up and use.
Prices and discounts and circulars may be had from Chas.
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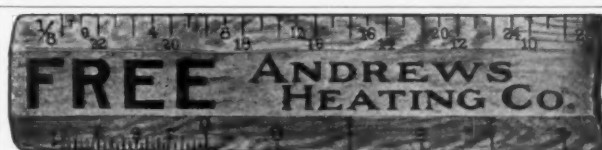
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Large Facilities, Prompt Deliveries

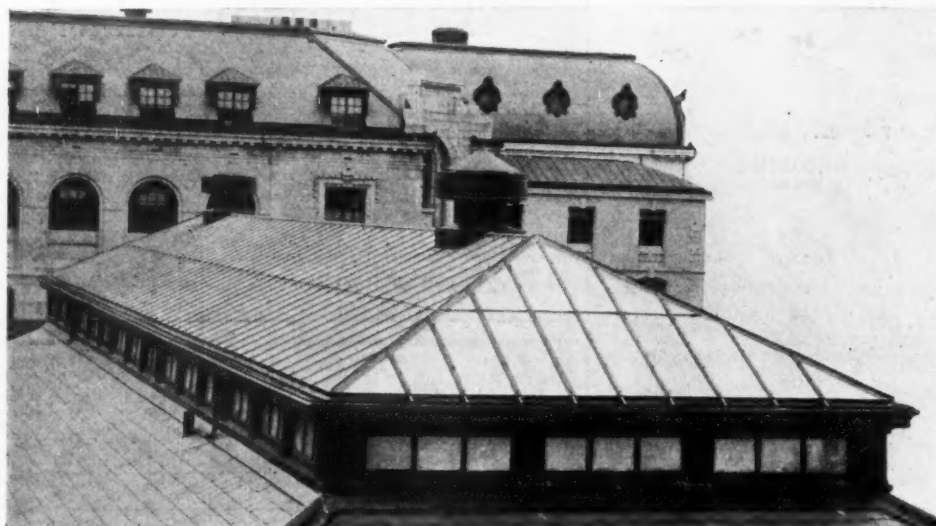
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Owing to the unusual strength of bar, no intermediate support was required on the above skylight.

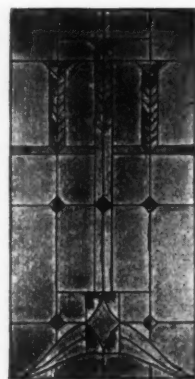
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**Forty Years of Reputation
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Our plans for 1909 involve the manufacture of more than double the product we marketed in 1908.

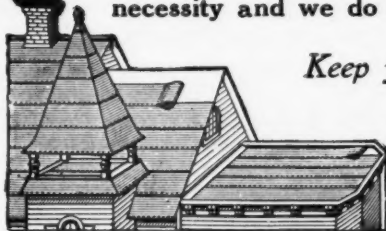
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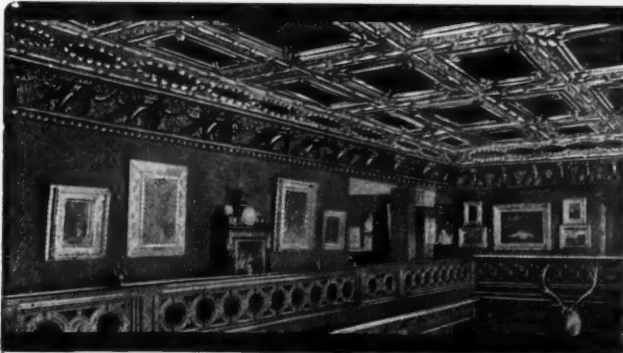
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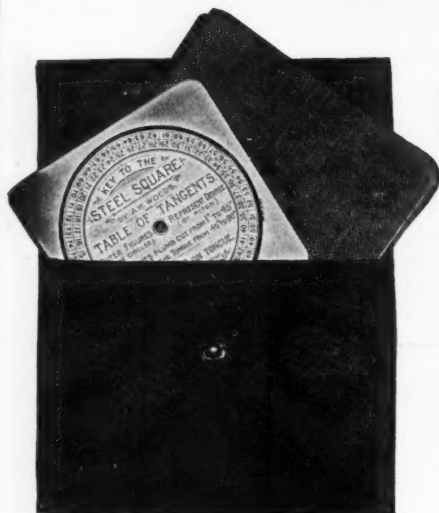
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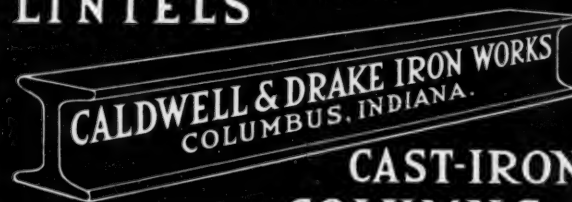
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Our designs are
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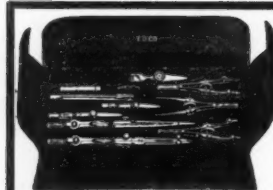
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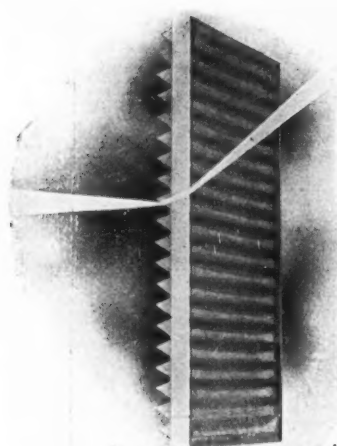
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The secret of the successful results that always follow Luxfer Prisms is in the sharp, accurately cut angles. Sheet prisms cannot give such results; they merely throw the light on one spot—Luxfer Prisms distribute it into every nook and corner. The light rays are not merely reflected; they are scientifically directed—bent—focused. They are drawn from the sky to places they would otherwise never reach.

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Ninety per cent of the total installations are on our principle. This is appreciable evidence of superiority of the Luxfer system. It is testimony of the fact that architects and contractors are not risking their reputation by installing imitations.

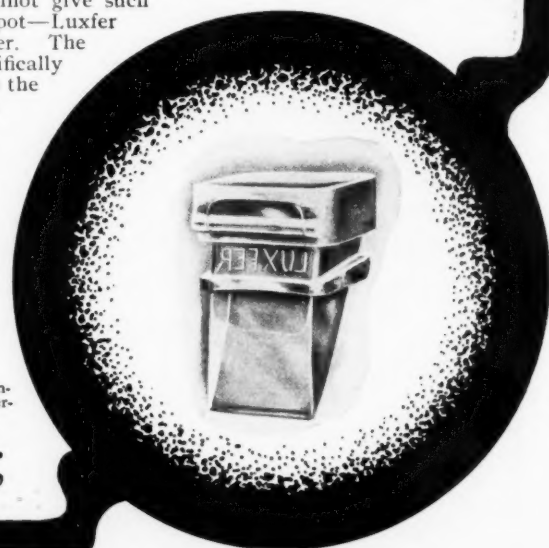
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Contractors contemplating Luxfer Prisms can obtain ready-to-lay slabs made up to any specifications, at our shops.

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Drop a postal for our booklet—"Daylighting." Gives you an insight into the most advanced method of daylighting and makes interesting reading for contractors.

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Carborundum Sharpening Stones cut fast and clean—put a keen lasting edge on a tool that you can't get so easily or quickly with any other stone.

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In neat paste-board case—a handy thing for any man to have. : : :

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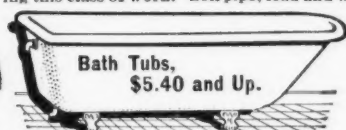


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30 gallon range boilers 200 lb. test at... **\$4.90**

Seamless stone-ware laundry tubs at... **\$3.95**

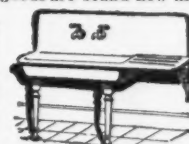
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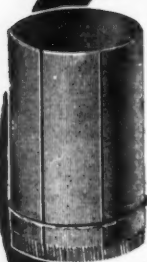
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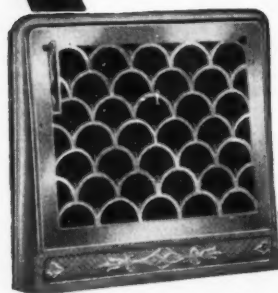
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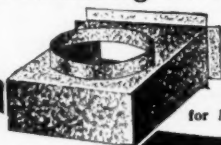
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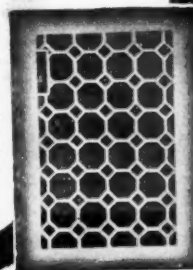
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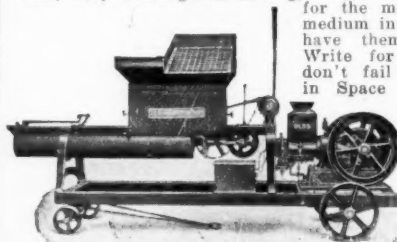
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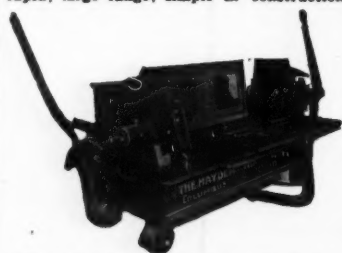
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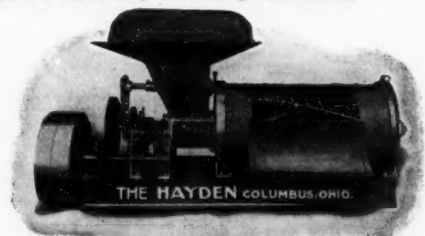
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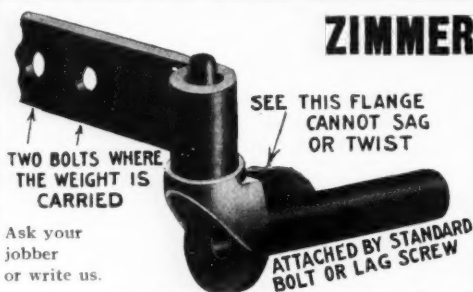
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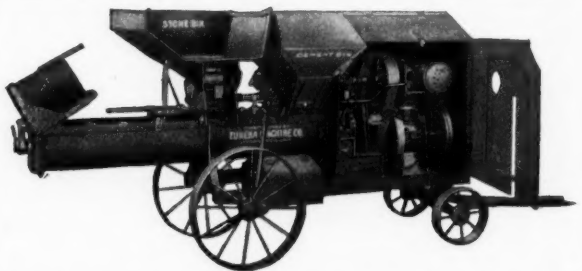
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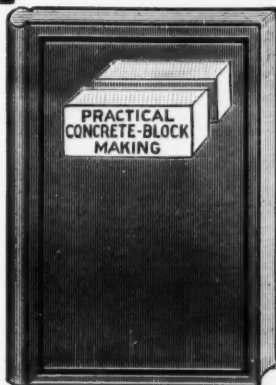


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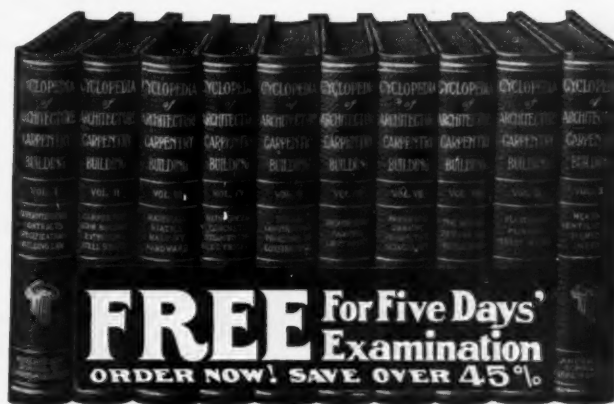
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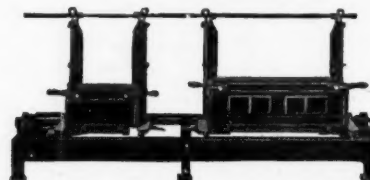
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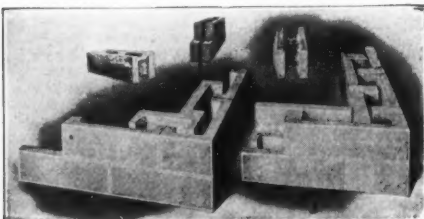
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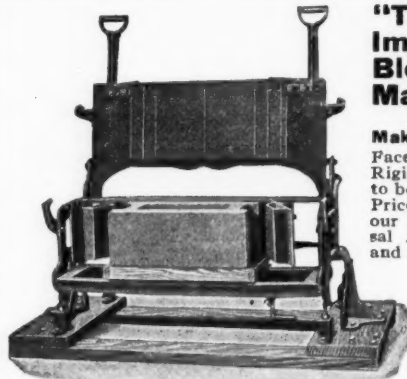
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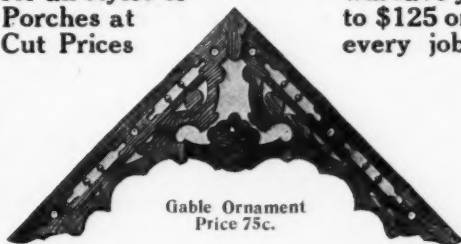
109 Cortland
Street,
Jackson, Mich.

See our display at Chicago, Feb. 18th to 24th.



Millwork for this Porch, \$23.38.

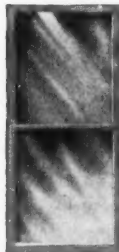
**We Sell Millwork
for all styles of
Porches at
Cut Prices**

Gable Ornament
Price 75c.

**Our Stair Department
will save you from \$60
to \$125 on
every job.**



Oak Stairs, Complete, \$28.59.

"Graceland"
Door with Plate Glass
\$11.25

Windows, 63c.



Pine Door, 77c.

500 Sq. Feet Best
Building Paper, 37c.

Old Houses Made New at Small Cost!

Write for Grand Free Millwork Catalog
5000 Bargains in Doors, Windows, Mouldings, All
Material for Stairs, Porches, Vestibules, Grilles, &c.
Quality and Safe Delivery Guaranteed Anywhere

Send for handsomely illustrated Free Millwork Catalog showing all kinds of material for building or remodeling. Everything in the latest styles approved by best architects. Each of the 5,000 items offered at a bargain price. You can buy, direct from the world's largest building material plant, whatever you require for modernizing both exterior and interior of your home. All styles of doors, from plain pine to finest Art Front Doors of polished hardwood. Prices 80 cents up. Windows in every size and style, from plain windows at 63 cents to magnificent Venetian Art Glass Windows in beautiful color effects. Material for complete flight of stairs, only \$24.73—an actual saving of \$60 to \$125. You will be surprised at the small cost of Hardwood Flooring, Plate Rail, Beamed Ceilings, artistic Mantels, beautiful Grilles and Colonnades, Sleeping Porches and other up-to-date improvements that any carpenter can put in.

We Undersell Everybody on Building Material

We do a business of over a million dollars a year. We carry immense stocks of guaranteed building material in our own warehouses and lumber yards. No other concern can duplicate our prices. All our material is guaranteed up to the Official Grades of the Sash & Door Manufacturers' Associations. We sell for cash and ship everywhere under an absolute guarantee of safe delivery and satisfaction or money back.

If you are going to build, remodel or repair a house, barn or any other building, we can save you from 50 to 75 per cent of the usual cost. Don't fail to send for the Free Catalog of Millwork and Building Material.

Gordon-Van Tine's Famous Book on Plans FREE!
44 Complete Houses, Bungalows, Cottages, Barns

The most popular collection of plans for beautiful, practical homes. Up-to-the-minute in style. Correct in every detail. Designed by licensed architects. Don't build until you see these handsome homes. The complete Book of Plans mailed free on receipt of 10 cents to cover cost of packing and postage.

Gordon-Van Tine Company

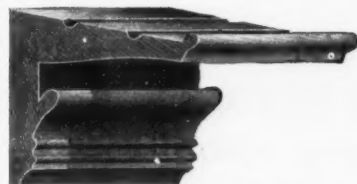
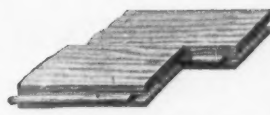
World's Largest Building Material Plant

454 Federal Street

Davenport, Iowa

"Claremont" Door,
with Clear Glass, \$4.50.

Art Window, \$3.75.

"Manhattan" Door
Etched Glass, \$3.16.Stair
Newels.Price,
\$2.85.Price,
\$2.83.Comb'nat'on Oak Plate Rail and
Picture Moulding, per Foot, 7c.100 Lineal Feet Oak Flooring,
80c.Oak Beamed Ceiling, Lineal
Foot, 13c.Classic Mantel,
\$24.75.

Don't! Tamp Your Life Away “ “ Money “

WHY?

Make 100 Strokes to produce a block
Make 100 Blocks a day

WHEN

You can produce a block with one stroke
You can make 2000 Blocks a day on
a machine that don't cost any more.

We could not show cut of Multiplex here and do it justice. But our catalog "R" illustrates and explains it in every detail.

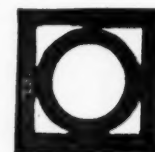
You can make all styles and sizes as well as chimney block on the one machine.

These statements are not advertising statements, we can prove it. Write

for catalog "R" and you will readily see the reason. Our chimney block is the only one of its kind.

THE MULTIPLEX CONCRETE MACHINE CO.

744 Ohio Building
TOLEDO, OHIO.



"TRUS-CON" JOIST HANGERS

Strongest

as shown by
University Tests.

Made from OPEN
HEARTH STEEL.

SAVES cutting and weaken-
ing of timber. " " " "

SAVES labor in installation.

LOWEST FIRST COST.

All styles and sizes for Brick
and Concrete Walls, Steel and
Wooden Beams. " " " "

WRITE TODAY FOR PRICES
TO SPECIALTY DEPT.

TRUSSED CONCRETE STEEL CO.
624 Trussed Concrete Bldg., DETROIT, MICH.



"Standard" Concrete Machinery "MACHINES OF QUALITY"



Is the fastest Hand Brick Machine on the Market; will make plain, veneered and ornamental face and shape; all perfect, smooth brick, true to size and design. Send for catalogue giving complete line of Mixers and Brick Machines.

SOUTH BEND MACHINE MFG. CO.
General Sales Offices, 40 Dearborn St.
CHICAGO, ILLINOIS



CORTRIGHT

METAL SHINGLES

are only one eighth the weight of slate

CORTRIGHT METAL SHINGLES

THE PERFECT ROOFING NEVER NEEDS REPAIR

SLATE ROOFS

Cortright Metal Roofing Co. - Philadelphia and Chicago

YOU'LL ADMIT

These are good points—there's no question about that—they appeal to your professional instinct. You see possibilities where they can be used to advantage in the future—where they could have been in the past too, possibly. What you can't see, is—how much larger your bank account might have been if you had been putting on Cortright Metal Shingles in place of other kinds of roofing. We wish you could, for there would be no further doubt about our securing your further orders. Give us the opportunity to demonstrate this to you by sending for our 56 page book, "Rightly Roofed Buildings."



SHINGLES THAT LAST

The National Sheet Metal Roofing Co.

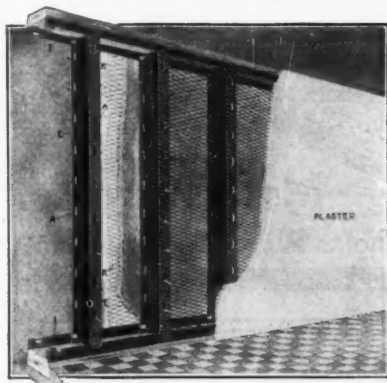
JERSEY CITY N.J.

Rain proof Durable WALTER'S SHINGLES

Rust proof Ornamental WALTER'S TILES

Write for Catalogue, Samples and Prices

You Are Missing Something Worth While, Mr. Contractor and Builder, If You Do Not Know About



BERGER PRONG LOCK STUDS and FURRING

for use with expanded metal lath.

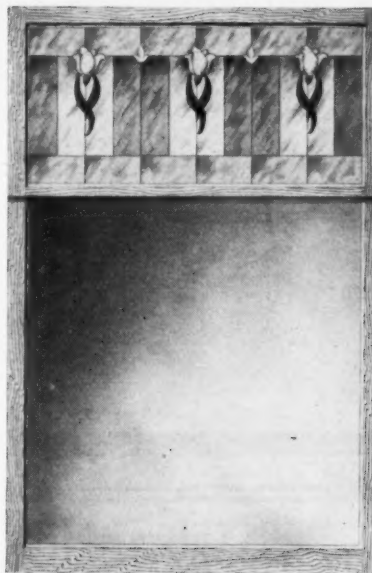
It is a system you ought to be posted about. It is both simple and effective. One man can hang the lath on the prongs and clinch them securely with the tap of a hammer. Berger Prong Locks save time and money. There's no wiring and the lath can't get away.

Write TODAY for catalog F-55-S, which shows how this system is applied to various classes of construction.

THE BERGER MFG. CO.

CANTON, OHIO

New York, Philadelphia, Boston, Chicago, St. Louis, Minneapolis, San Francisco, Atlanta



ART NOUVEAU

The Latest in Leaded Glass

We Will Mail FREE

a copy of our new door book No. 107F, if you haven't one. This book shows new patterns of Leaded Art

Nouveau Transom Lights. Special Lace patterns and 68 patterns of our new innovation

WIDE STILE FRONT DOORS

These are full 5-inch face and permit the use of any size lock.

Veneered Doors, Painted Doors, Store Doors and front stair work all shown in this book.

The Foster-Munger Co. Chicago, U.S.A.



17,800 POUNDS PRESSURE

THE Movable Automatic Core that moves down with the pressure of the machine is entirely a new feature. It is a money-saving feature that practical concrete men cannot very well afford to overlook.

This is not the only feature that puts the Sanford right in the lead. The 17,800 pounds of pressure that is put on every block made is a point of advantage that cannot—**positively cannot**—be talked away. Right on the block comes the pressure—just as much force at close of day as in the morning. Speaking of this feature "Concrete Block" says: "It saves labor charge and has the additional advantage of being uniform throughout the day's work."

The Sanford is the **only** face-down hollow block pressure machine in existence. Sold strictly on its merits it will make 300 to 500 veneered hollow blocks or 400 to 600 veneered slab blocks every 8-hour day. Cores a 6-inch, 8-inch, 10-inch and 12-inch single wall block, 6-inch and 8-inch high face veneer and hollow blocks, two-piece metal tie, two-piece Header bond System, same machine.

As a duty to your clients—to your pocket—to your common sense, you should look thoroughly into this proposition. The free book is just as convincing as it is interesting and proves the advantages of the Sanford are of more real benefit in practice than would appear. A postal to-day is all that's necessary.

The Sanford Concrete Machinery Co.
1645-1647 Nicholas Bldg., Toledo, Ohio

"BRADFORD PRESSED BRICK" "BRADFORD REDS"

Trade-Mark—Sept. 12, 1905—July 15 1907



Size 2 1/4" x 4" x 8 1/2"

Positively Unequalled for Richness of Color
Perfection of Shading and Uniformity of Size

MANUFACTURED EXCLUSIVELY BY

Bradford Pressed Brick Company
BRADFORD, PA.

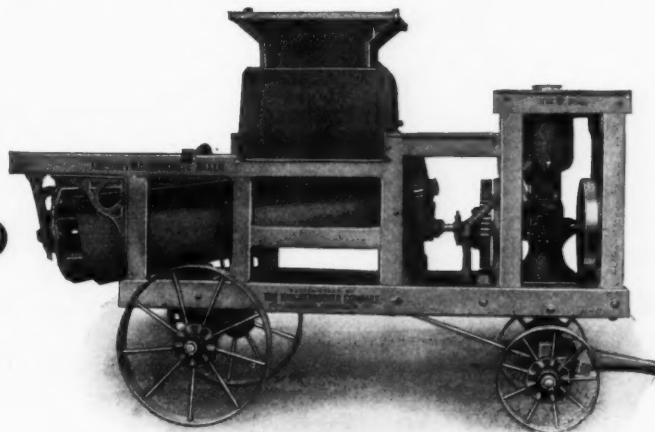
Standards, Romans, Moulded and Ornamentals
Selected Brick for Mantels

Mixer on Fourth Floor

PUT INTO FORMS

70 CU. YARDS IN ONE DAY

SEE THEM
AT
CHICAGO
FEB'Y
17-25



SECTIONS
31-45
COLISEUM

TEXAS

Mr. A. H. Dunn, Houston, Tex.

Fort Worth, Tex., Dec. 4, 1908.

Dear Sir: Yours of November 28th received, and will say the old saying is good sometimes, but I find the Coltrin Concrete Mixer good all the time. I have my No. 6 Mixer on the fourth floor of the building, and have today put in 70 cubic yards of concrete with two men shoveling and one man handling cement.

Very truly yours,

W. S. BAILEY, Contractor.

801 Missouri Ave., Fort Worth, Tex.

WASHINGTON

Mr. N. J. Morehouse, Waterloo, Ia.

Bellingham, Wash., Aug. 18, 1908.

Dear Sir: Enclosed please find check for \$290.00 in full payment for the No. 6 Coltrin Concrete Mixer. The Mixer is on the work at Blaine. I have not seen it yet, but Mr. Campbell reports it doing splendid work. He is well pleased with it and says that it is saving the price of four men every day he runs it.

Wishing you lots of success, I remain,

Yours respectfully,

S. E. BOOKER,

Booker & Campbell, General Contractors.

SHIPPED ON TRIAL TO ANY PART OF THE
UNITED STATES

MANUFACTURED EXCLUSIVELY BY

THE KNICKERBOCKER CO., JACKSON, MICHIGAN

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NOTICE TO ADVERTISERS

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 185 Jackson Boulevard, Chicago, not later than February 20 in order to insure insertion in March number.

Pyko Grinders

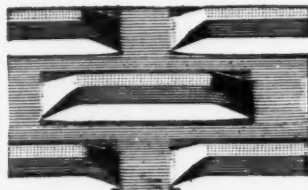


Every mechanic should carry one in his tool kit. Cuts ten times faster than a grindstone. Quickly adjusted. Easily operated, are strong and durable. Each machine fitted with one of our pure corundum wheels—None better for any kind of tool grinding.

Ask for our Pyko Booklet
It shows the complete line

Pike Mfg. Co., Pike, N. H. Dept

SYKES METAL LATH



The lath that is positively different to anything else made; different because it combines more good features.

Cup lath is the only Expanded Metal Lath that can be plastered on either side—cannot be applied wrong because both sides are alike.

We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH

Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath. This means that the weight and thickness is not reduced and is less susceptible to rust.

Requires no furring out from studs because it is self furring.

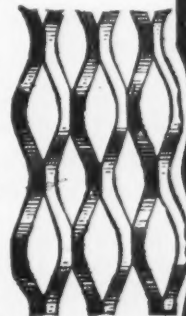
It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country.

In fact, when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

Sykes Metal Lath & Roofing Co.

NILES, OHIO

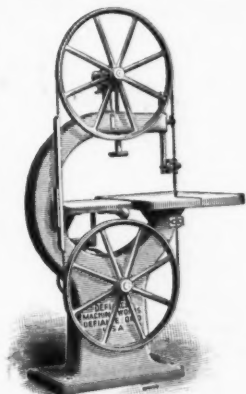


“DEFIANCE”

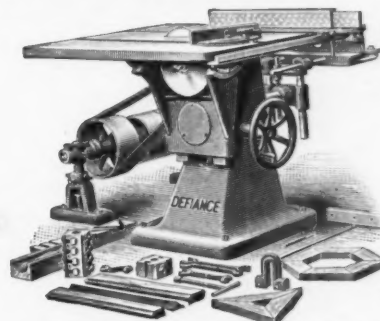
Wood-Working Machinery

Invented and Built By

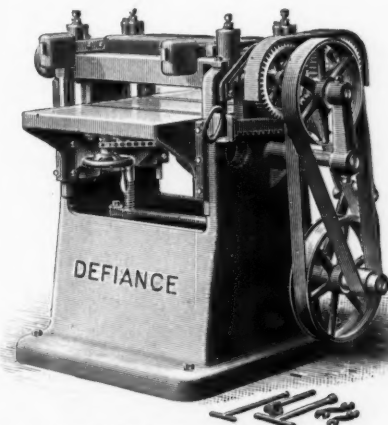
The Defiance Machine Works
Defiance, Ohio



28" Band Saw



No. 8 Variety Saw—Cut-Off and Rip

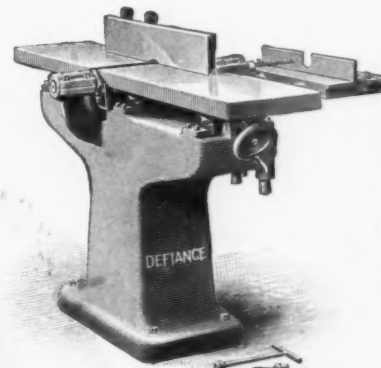


24" Single Surface Planer

These machines are of the highest grade, built in large numbers and sold at moderate prices
..Write for Particulars..



No. 1 Knife Balancing Machine



12" Hand Planer with Boring Attachment

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

"NATIONAL"

MEANS *Hinge Excellence*

THE WAY to tell good butts and hinges is to look for the name. If it's "National" that's all you need to know. If it isn't "National" look again.

Of course you've heard about the superiority! The simplicity that cuts cost of hanging doors down to one half:—the slot in the lower tip for a screw driver, making it easy to remove pin:—the durability that is obtained by subjecting screws to a shearing strain:—and then—the individuality of every design.

"National" Ornamental Butts and Hinges are made 'right'. We supply them in all sizes from 1½ to 4½ inches inclusive, in steel, brass or bronze—in all standard finishes or we can match any special finish on short notice. Beautiful exclusive and unique designs that impart a finish to every door.

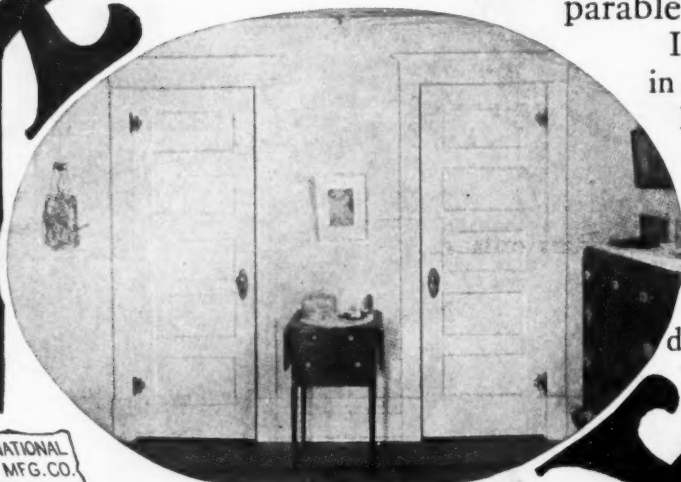
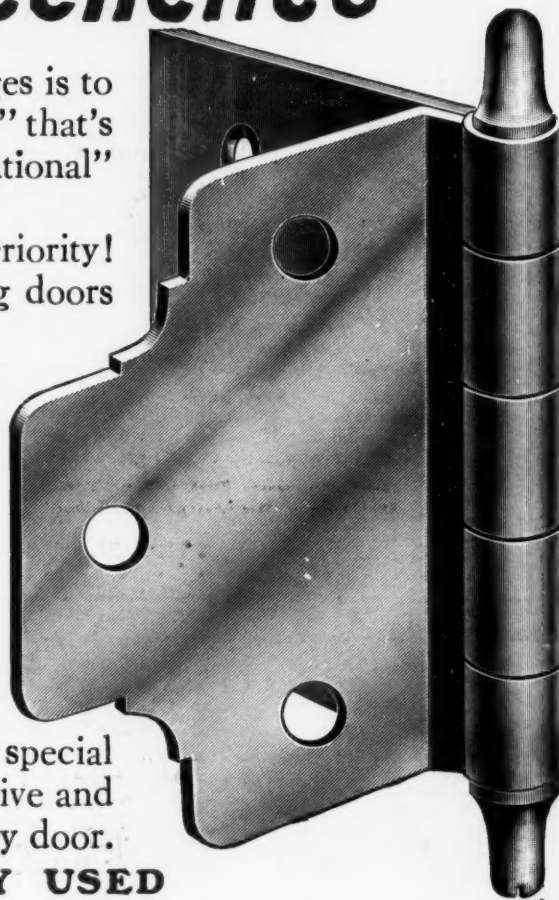
UNIVERSALLY USED

In all kinds of public buildings and private residences—in America and Canada. "National" Butts and hinges are giving incomparable satisfaction.

It will pay you to become interested in these products. Send for the booklet, "Ornamental Ideas". It is well illustrated with new suggestions for door ornamentation and contains useful pointers for carpenters and contractors. We send it free on request — but just mention your dealer's name when writing.

National Mfg. Co.

Sterling, Illinois



NATIONAL
MFG. CO.

NATIONAL
MFG. CO.